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PROCEEDINGS. CONFERENCE IN THE MATTER OF POLLUTION OF THE NAVIGABLE WATERS OF THE DETROIT RIVER AND LAKE ERIE AND THEIR TRIBUTARIES IN THE STATE OF MICHIGAN. VOLUME 5, SECOND SESSION, 15-18 JUNE 1965

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PROCEEDINGS

VOLUME 5

Conference
In the matter of Pollution of the navigable waters of the Detroit River and Lake Erie and their Tributaries in the State of Michigan

SECOND SESSION JUNE 15-18, 1965

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Public Health Service

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THURSDAY, JUNE 17, 1965

9:30 A. M.

MR. STEIN: May we reconvene?

If we have to meet tomorrow, and as it looks we very well will, we will have a slightly different location. The meeting will be in this building in the Lecture Room, which will be marked when you come in. I understand the Lecture Room is Room 400, and there will be ample room.

To get to the Lecture Room, you should come in through the front door of the Museum.

We will call on Mr. Oeming again.

Mr. Oeming?

MR. OEMING: Chairman Stein and Mr. Poston, the schedule this morning is to hear from municipalities and other local governmental units who have expressed a desire to present a statement.

I have placed these in the order of taking the Detroit area first, both with respect to municipalities and governmental units, and then the industries in the Detroit area, but starting out with the municipalities and governmental units.

With that, I would like to provide the opportunity for the City of Detroit to present its statement, and at this time I would like to call on Mr. Remus.

STATEMENT OF GERALD REMUS, MANAGER, SEWAGE TREATMENT WORKS, DETROIT, MICHIGAN

MR. REMUS: Conferees, members interested in this pollution problem:

We have here presented to the Conferees a report which I will not read in its entirety, and just discuss the essential points. I would, however, like to have this entered as part of a complete record.

MR. STEIN: Without objection, that will be done, and will be entered as if read, including the charts and maps.

(The Report of the Sewage Treatment Works, City of Detroit, is as follows.)

G. Remus

GREATER DETROIT'S PROGRAM
FOR
POLLUTION CONTROL

June 17, 1965

SECTION I

SUMMATION

"Our conservation must not just be the classic conservation of protection and development, but a creative conservation of restoration and innovation."

These words were used by the President of the United States earlier this year in a message to Congress in which he provided guidelines for improving America's Natural Beauty. From that message the words "stream renewal" have sprung. When applied to the Detroit River the term is a new one. But the practice of renewing the Detroit River has been under way for a quarter century.

Detroit's stream renewal program has carried for many years the unglamorous title of "metropolitan sewage treatment system".

Detroit's first step in this renewal program was in 1940 with the opening of a sewage treatment plant.

G. Remus

In 1957 renewal efforts were accelerated with a plant expansion program and added emphasis on a metropolitan pollution control program.

Since 1957, Detroit and the counties of Wayne, Oakland and Macomb have spent more than $266,000,000 for pollution control. Detroit's share exceeds $75,000,000.

The improvements can be measured, especially in the upper Detroit River. Yet much is to be done. The job of stream renewal is not complete. Although the Detroit area is regarded as a leader in the field of pollution control, we are not content to rest with past performances.

As we see it, there are three major areas in which we must work.

One is to develop for the Detroit River drainage basin an efficient, economical waste collection system. Another is to install the necessary treatment processes as research, health standards and pollution control criteria dictate. A third area concerns primarily the beautification of our waters, which can be improved greatly through the stabilization of water levels. Such a proposal is now being studied by the International Joint Commission and is under consideration by the National Rivers and Harbors Congress.

G. Remus

One needs only to look at the topographical map of the six-county Detroit area to see why one effective sewage collection system is needed.

Four major tributary rivers on the Michigan side of the River--the Clinton, the Rouge, the Huron, and the Raisin--drain into the Lake St. Clair - Detroit River - western Lake Erie complex.

These four rivers carry with them the septic tank seepage, industrial wastes, street and field drainage containing fertilizers, pesticides and insecticides of an area of more than 3,200 square miles.

Added to the growing Canadian petroleum and chemical industry along the St. Clair River, these four rivers negate much of the recent progress made in the water quality of the Detroit River. They also hamper further improvements.

For example:

The Clinton River, which because of its small flow, is expected to be more than 50 per cent sewage plant effluent in 15 years. The Clinton River drains into Lake St. Clair.

The Raisin River, which flows directly into western Lake Erie, and septic tank runoff from the area are cited by the United States Public Health Service as the cause of the periodic contamination of the waters at Sterling State Park.

The present pattern of pollution control at the local level is highly fragmented. There are more than 60 sewage treatment plants in the six-county area. The result is a piecemeal approach which fosters costly duplication of facilities and service.

A similar condition existed ten years ago in the field of water supply. However, a metropolitan water supply system has been developed which proves that a regional approach to a regional problem results in an economical, efficient service to participating communities.

The benefits of the Detroit metropolitan water system are now enjoyed by 62 communities, including Detroit, comprising more than 40 per cent of Michigan's population. The Detroit area--unlike New York City for example--has an abundant supply of fresh, high quality water at one of the lowest rates in the United States.

In 1957 the Detroit Department of Water Supply proposed an areawide pollution control system, organized along the same lines as the water system. That plan was expanded into a program adopted earlier this year by the Detroit Board of Water Commissioners. The expanded 1965 program carries the approval of the Michigan State Department of Health, as did the 1957 program.

Basically, that program calls for a unified method of cleaning the tributary streams leading to the Lake-St. Clair - Detroit River - western Lake Erie complex.

Areas and industry not now adequately served by water pollution control facilities or which are not served at all would be brought into a central system. That is expected to require $181,000,000 worth of construction which can be financed locally without imposing unreal fiscal burdens on homeowners or industry.

The metropolitan Detroit stream renewal program also calls for the continuation of research experiments to develop better methods of treating, especially storm overflow and industrial wastes.

Technicians in the field of waste treatment have not yet reached agreement on the criteria of treatment needed for our Lake St. Clair - Detroit River - Lake Erie complex. A consensus is being sought by the responsible agencies involved.

A consensus also is necessary concerning the data collected by the United States Public Health Service in the recent study of Detroit area waters.

Important differences exist between the data collected by the Federal technicians over two four-day periods and the data collected by local technicians over the period of many years. These differences involve BOD, settleable solids, and suspended solids, each an important measurement of water quality.

The inconsistency of data exceeds the acceptable limits of experimental error.

For example:

	DWS		USPHS	
	Number of Samples	Per Cent Removal	Number of Samples	Per Cent Removal
Suspended solids	9125	49.5	16	39
Settleable solids	9125	84.3	16	52
BOD	9125	37.2	8	17

Detroit's program is dedicated, organized, and financed so that as the area develops and the economy expands, the system will keep pace. It is an area answer to an area problem.

The United States Public Health Service report reflects only on technical aspects, and omits an answer for administration and financing, and fosters the continuation of piecemeal handling of a regional problem.

Our treatment standards are ever improving, and further improvements will be made as studies clearly indicate what constitutes sound procedure.

Secondary treatment cannot be recommended at this time because we are not in agreement on the basic data from which to form judgments, nor can anyone tell how much the river's quality will be improved.

We do not, however, intend to pause in our stream renewal efforts. We intend to offer help in all areas, particularly downriver, with our financial and administrative capability, to bring all areas up to State standards.

We are now experimenting with improved filtration and chlorination methods at the Sewage Treatment Plant.

We are constructing and will continue to construct another $50,000,000 worth of storm flow capacity, which will further reduce the "first flush of the storm". We will be stepping up considerably our cooperative program with industry. so that only wastes than can be adequately treated at the treatment plant will be accepted into the system. Wastes are ever changing, particularly in the chemical, radioactive, and the new space age metalurgy techniques.

The USPHS report reflects only a bad situation after it has occurred. We believe that for the benefit of industry, as well as for our operations, a good preventative pollution program will do the most good. We have already put this idea into action.

The rapid increase of the areas we serve will rapidly eliminate the great portion of the 177,000 septic tanks of the drainage area, as well as many inefficient subdivision treatment plants.

Continued and expanded efforts will be directed toward improving the quality of the waters of the main tributaries that discharge into the Detroit River. Installation of control and research instrumentation on Detroit's system is underway and will be stepped up as soon as 50-50 matching funds become available under Federal study grants.

Twenty-four hour control personnel will be on duty and properly operating our many storm pumping stations. We will be able to reduce considerably the storm flow problem.

Grease, oils, and phenols will be reduced further. Improved treatment will be installed for those wastes where definite eliminating processes exist, and research with pilot plant operation will be supported in every way with Federal, State, and local officials.

Our entire financial capability is committed to expansion with gradual improvement. Our financial position is such that we can match funds and immediately step up our research, our treatment standards, or our development, directly in proportion to the additional funds that are made available.

G. Remus

Again, we reemphasize that we intend to continue our stream renewal program -- by expanding our areawide operations, by improving our treatment processes, with special attention to pollution prevention, and by energetic study to control the wastes for which technology has no solution.

And finally, here and now, we challenge anyone on the Great lakes, particularly in southwest Wayne County, and all communities on the Rouge, the Huron, the Raisin, and the Clinton Rivers to match our record of improvement and to keep up with us in the future.

SECTION II

PROGRAM AND ACHIEVEMENTS

THE ISSUE

The Detroit River must be improved and the issue is: how can this be done best with the available money.

The Detroit Department of Water Supply after a thorough technical study in 1957 adopted a program to clean up streams, recognizing that the job must be done on an area basis, and that not only was it necessary to decide on what had to be done but how it was to be administrated and financed. Today our sewage system serves Detroit and 49 neighboring communities.

The Detroit anti-pollution program calls for the same methods of development that are being used to build the metropolitan water system, now serving Detroit and 61 neighboring communities--better than 40 per cent of the State's population. We all remember that ten years ago Detroit was on short water supply, a difficulty that has now been corrected.

We have gradually improved the Detroit River down to the Rouge River--the area of our responsibility--simultaneously handling the additional pollution load brought about by the rapid development of the metropolitan area.

In 1964, a Board of Sanitary Engineering experts reaffirmed that Detroit's program of first organizing a regional system, with improved treatment to follow, would do more toward cleaning up all waters of the area than would higher treatment standards for a limited area at this time.

Modern sewage treatment (secondary treatment included) cannot eliminate many of the wastes that degrade our waters. We are researching all phases of this in cooperation with Federal and State agencies.

Pollution is an area problem, and correcting it must be on this basis. Our financing base and organization have been and will continue to help the area, gradually raising our standards throughout the entire drainage basin.

WHAT HAS DETROIT ACHIEVED?

The City of Detroit has been developing and improving its metropolitan area pollution control program continuously since its Sewage Treatment Plant went into service in 1940. In 1957 our war on water pollution was renewed by launching a $33,000,000 enlargement and improvement program. A rate increase of 77 percent was asked for and approved to finance this work.

1. Area Sewage Treated Since 1940.

The initial treatment plant, interceptors, lift stations and regulators were placed in service in 1940, at a cost of $7,379,000. Provisions were made in the basic design and construction for a plant that would serve 4,000,000 people.

2. 1957 Program

By 1957 the population served had reached approximately 2,500,000. The number of suburban communities served had reached 35. And another $32,794,000 was committed by Detroit for pollution control facilities.

The advantages of a metropolitan sewage disposal system were established and now recognized, because this commitment was one of the larger factors that triggered additional interceptor, treatment, and pumping station construction totalling $266,900,000 for the three-county area of Wayne, Macomb and Oakland.

Exhibits A and B delineate the program.

The program was approved by the Michigan Department of Health in 1958. The Department of Water Supply (DWS) and the Michigan Department of Health mutually agreed that improved treatment processes would be adopted when all factors, findings and technical data would clearly indicate what the proper improvement should be for the public's health and welfare.

In 1963 the program was amended to provide for the construction of an interceptor to Oakland and Macomb Counties, to eliminate the necessity for constructing another treatment plant on the already overloaded Clinton River. Also, it was during this period that all of the domestic pollution going into the Rouge River was accepted into Detroit's treatment plant.

The work scheduled in the 1957 program which has been completed is:

Additional sedimentation tanks
Additional sludge filters
Enlarged effluent conduits
An emergency outfall
Additional sludge incinerators
Additional ash lagoons
Smoke abatement at the Sewage Treatment Plant
The Northwest Interceptor
Additional regulators and diversion devices
Puritan Pumping Station
Improved operation of the system during storm run-off
Improved bacteriological treatment

In addition, nearly $50,000,000 has been expended by the City of Detroit for additional relief sewers. These sewers also serve as storm water storage devices and act to reduce the amount of combined sewer overflows.

3. Progress

The record shows that we and the municipalities of the Detroit metropolitan area are voluntary leaders in actively controlling water pollution.

All work done by the Detroit system was done without the necessity of any court order. And a "building ban", caused by improper sewage facilities, was not necessary in Detroit or any area that we provide service for.

WHAT WERE THE RESULTS?

The condition of the Detroit River adjacent to our service area, which is composed of Detroit and 50 suburban communities above the Rouge River, has been continuously improving even though the waste produced in the area has increased rapidly due to industrial and commercial expansion and residential construction. It should be recognized here that much of the area expansion was in turn made possible by the existence of a suitable metropolitan sewage disposal system.

There are several measurements which establish that the Detroit River is being improved:

G. Remus

1. Coliform Bacteria Reduction

Continual tests are taken to evaluate the quantity of harmful bacteria in the river. Tabulated below are the highest median coliform counts per 100 ml found in a sampling range across the Detroit River downstream from Detroit's Sewage Treatment Plant outfall but upstream from the mouth of the Rouge River.

Year	American Shore	Canadian Shore	I.J.C. Standard
1959	68,000	11,300	2,400
1960	23,000	4,300	2,400
1961	53,000	4,300	2,400
1962	1,600	9,300	2,400
1963	580	4,300	2,400
1964	930	3,350	2,400

The I.J.C. acceptable standard as agreed upon by the United States and Canada is a coliform MPN median value of 2400/100 ml. The usual standard for bathing beaches is that bacterial pollution shall not exceed 1000 organisms per 100 mls.

Thus, except during storm periods, the portion of the river within the area of our responsibility meets the bacterial requirements for approved bathing beaches.

2. Reduction of Combined Sewer Overflows

Through improved operation of the Sewage

Treatment Plant and pumping stations and by the construction of additional relief sewers and pumping stations, we have been able to reduce the quantity of combined sewer overflows as well as the solids content. For example, the quantity of storm flow pumped into the Conner's Creek channel was reduced from 7,100,877,800 gallons in 1959 to 3,328,510,900 gallons in 1964 and the number of days on which pumpage occurred was reduced from 61 to 41. These figures would have been much larger if the area were served by separated sewers.

3. Reduction in Industrial Wastes Loading

Since 1948, the grease and oils found in the Detroit River have been reduced 79%, phenols 71%, ammonia 22%, cyanides 72% and suspended solids 51%. It must be recognized that oils, gasoline and other chemical products spilled anywhere in the Great Lakes drainage basin, whether caused by accident or by traffic, will eventually find their way to our rivers and lakes through the storm drainage process, and it is doubtful, therefore, that they can be entirely eliminated. Where possible, these wastes must be controlled at the source.

WHAT IS BEING DONE?

1. Work Under Contract

G. Remus

Nearly $2,200,000 worth of work is now under contract for improvements at the plant:

Improved and expanded sludge handling facilities

Improved sludge conditioning facilities

Improved and expanded sludge filtration capacity

Development of a pneumatic ash handling system

Improved smoke abatement equipment

Combined flow interceptor and pumping station

2. Operation and Maintenance

Over $5,000,000 is being expended annually for operation and maintenance of the sewage treatment system.

New filtration practices for half of the plant are now functioning.

Our forces are refurbishing all diversion and regulating devices.

Improved pumping techniques have kept all interceptors and trunks cleaner, thereby reducing the first flush of storms.

3. Suburban Service

We are working with suburban communities to arrange for providing sewage disposal service to additional areas throughout the metropolitan system and to obtain the necessary storm water and sanitary sewage collection capacity thereby eliminating many septic tanks and reducing the pollution load on the Detroit River tributaries. (See Exhibits C and D.)

4. Relief Sewers

The City of Detroit is proceeding to construct another $50,000,000 worth of relief sewers which will provide additional storm water detention.

5. Objectives

Our program is to unify and coordinate sewage disposal throughout the metropolitan area so that all inhabitants of the area may enjoy the economies of a large single system and be assured that their wastes are being disposed of in a responsible manner. Toward that end steps are being taken to improve the adequacy and efficiency of the treatment plant and collecting system, and efforts are being made to reduce combined sewer spills.

By expanding the system as the metropolitan area builds up, the 177,000 septic tanks yet existent will be gradually reduced.

G. Remus

WHAT WORK IS PLANNED?

1. Program

The 1957 basic program will continue and be expanded.

The recently released report on Metropolitan Sewerage and Sewage Disposal, prepared for the Supervisors Inter-County Committee by the National Sanitation Foundation, recommended that about $180,000,000 worth of treatment plant and interceptor facilities be constructed in the metropolitan area within the next 18 years, and that the single system for the area be administered by the Detroit Department of Water Supply because of its proven ability and financial capability. (NSF Summary, Conclusions and Recommendations - Exhibit A-1. Copies of full report available from National Sanitation Foundation.)

The program calls for expansion of the treatment plant under a design to serve an ultimate population of 7,500,000 and construction of additional sanitary interceptors to relieve and supplement the existing combined flow interceptors.

The Board of Water Commissioners has endorsed the recommendations for expansion and plans to proceed with the work, in full recognition of the fact that the entire metropolitan area will benefit by organizing under one administration and pooling financial capability and pollution control efforts.

See Exhibits A-1, C, D, E, F and G.

Detroit's basic program was not only subscribed to by the Supervisors Inter-County Committee (SICC) but also by another blue ribbon research committee. Metropolitan Fund, Inc., endorsed this as the best type of procedure. Their report was released in May, 1965.

2. Major Projects

Some of the major projects scheduled for the near future are:

Additional sedimentation tanks

Interceptors for Oakland and Macomb Counties

Complete monitoring of the system

Remote control of the system

Preventative sewer cleaning

More disinfection

Improved and expanded sludge filtration capacity.

Improved regulating and diverting devices

Whatever treatment is necessary to protect the public's health and welfare.

3. Objectives

The program as now planned will provide for the interception of additional sanitary wastes not now treated, the removal of a greater proportion of solid wastes and BOD, and the reduction of combined sewer overflows. New ideas for improved treatment will be adopted as they become perfected.

4. Deleterious Wastes

Beginning this year, the City will increase its annual expenditures $100,000 for the purpose of stepping up enforcement action of the City's deleterious waste ordinances, by locating and stopping the dumping of excessive quantities of certain types of industrial wastes into the metropolitan system. It will be required that floating oils and greases, phenols, cyanides, and other undesirable synthetic or natural wastes be treated at the source because these wastes are more practical to treat before becoming highly diluted.

5. Cooperation with Industry

The City will work with industry to find and adopt practical methods for the pretreatment of objectionable types of wastes. It has been found that some wastes can be converted to an acceptable type of waste which can then be discharged into the sewer system without endangering water quality. This avenue provides one of the greatest opportunities for improvement.

6. Water Program

Prior to 1956 water shortages were plaguing the Detroit suburban areas, such as is now the case in many other regions of the United States. In 1956 the Department of Water Supply began its program of financing and constructing water transmission mains and pumping stations in suburban areas to serve these areas. The areawide water problem has been solved and we are well ahead of the problem. The consumers are enjoying the lowest water rates of any metropolitan area in the country.

We are proceeding to handle the sewage disposal problem in the same effective manner under the provisions of our 1957 program.

In each of these programs (water and sewage disposal) there exists an uneconomical portion of a complete system development. We refer to the potential residential, commercial and industrial activity not yet existent to properly finance the water and sewerage utilities needed. These have been financed by a combination of Federal funds and under the portion of our policy that allows us to spend system funds even though the service is not self-supporting for five years. This has helped a great deal in aiding the metropolitan area prosperity.

7. Stream Water Quality to be Renewed

We believe that our program as planned will provide a high degree of pollution control, and that its beneficial effect upon the waters in the Detroit River will be as great as can be achieved by the application of any practical technology now known.

We have been continually perfecting our program to effectively control water pollution. The water supply and sewage treatment aspects of water quality control is one economic problem.

The water shortages of 1954 have been corrected. The increased demand for water due to extraordinary activity has also been provided for, and we are organized to develop more supply as needed--all without tax money.

Likewise, the sewage treatment costs are now paid for entirely on a revenue basis, and our financing capability is ever-increasing.

It follows,however, that we cannot finance both area expansion and simultaneously raise treatment costs more than threefold and still provide the services to support area development.

Since the cost of sewage treatment is added to the cost of water, it follows that if either is raised too high, the usage of water drops and net revenues do not increase proportionately, and systematically by this method we will destroy our financing base.

WHAT IS REQUIRED?

Effluent quality standards alone provide no assurance of an effective waste water management program. Many other conditions are vital to a program of pollution control.

1. One Administrative Agency

A single metropolitan sewage disposal system is essential since complete pollution control cannot realistically be achieved if each community proceeds to develop its own system. A large single system also makes it possible for the inhabitants of the area to fulfill their pollution control responsibilities in a more economical manner.

2. Financial Assurance

A sound and adequate financial base with good prospects for its continuation is required to provide for the continual expansion, improvement and operation of the system. All financing to improve the basic system is now done by revenue bonds, with a class "A" rating. Tax money is not needed for orderly system expansion.

3. Feasibility Studies (Research)

Standards set by regulatory agencies must take into consideration the economic and physical feasibility of controlling each type of pollutant as stated in Section 8 (g) of the U.S. Water Pollution Control Act (PL 660).

4. Evaluation of Economic Impact

The best usage of available water resources must be carefully considered and reasonably determined consistent with the economic needs of the region, the effects on the health and welfare of the inhabitants and the effects upon stream quality.

5. Fairness to All--"Reasonable Use Thereof"

Those fulfilling their water pollution control responsibilities must have reasonable assurance that the standards and objectives of regulatory agencies will be consistent throughout the area, the State, the nation and in international boundary waters, and that enforcement will be uniform for all, whether industry or municipality.

6. What Water Quality is the Goal?

It is not enough to say that salts, solids, BOD, etc. are too high. Firm assurances of what our goal is must be given to the public.

7. The Existent Situation Must be Firmly Fixed

If millions of dollars are to be committed toward improvement, there must be a definite statement on what the basic situation is, and agreed upon by all agencies--Federal, State and local. This has not been done.

8. Results Must be Predicted

If certain treatments are adopted, then an accurate evaluation must be made of what the water quality of the streams will be after the costly construction has been completed. This has not been done.

SECTION III

EXHIBITS AND SUPPORTING STATEMENTS

DETROIT'S RECORD

U.S.P.H.S. DATA

Coliform Bacteria	--	down	99.99%
Fecal Coliforms	--	"	99.99%
Fecal Streptococci	--	"	99.99%
Suspended Solids	--	"	51%

Oil and Grease	--	down	79%
Ammonia	--	"	22%

Detroit's Flow -- 540,000,000 gallons per day represents a system of 3,000,000 people, plus a greater portion of Metropolitan Detroit industry.

Data and observation show the effluent is rapidly diffused in the river.

No deficiency of dissolved oxygen in the river.

Phosphates and Nitrates are the resultant of the process. There is no answer or solution to the problem of nutrients.

Chlorides -- Water at head of Detroit River shows 7-8 mg/l chlorides, lower river 18 -44 mg/l. The U.S.P.H.S. Drinking Water Standards permit 250 mg/l.

Storm Flow -- Data show 0.3 inches rainfall is retained and treated by system. One area retains and treats 0.2 inches rainfall. Sixty percent of all storm run-off collected and treated.

All bacteriological data on Detroit River from the Rouge River up include the effect of the Detroit Sewage Treatment Plant outfall. -- D.W.S. Range 6A.

River condition has improved even though sewage and industrial load has increased.

G. Remus

Three General Areas of the Detroit River:

1. Above Rouge River -

This area Detroit is responsible for.

2. Rouge River to Lake Erie -

Receives much industrial waste. Sewage treatment plants of Trenton, Riverview and New Wayne County plant at Wyandotte were not studied. Five foot sewer outfalls in Trenton missed.

3. Raisin River -

Detroit has no connection with the Raisin River. The pollution from the Raisin River plus snorefront homes caused Sterling State Park to be closed.

Many recommendations have been made as to what the quality of the effluents should be from sewage treatment plants and industry.

There is no statement as to what the condition of the Detroit River and Lake Erie will be or what quality can be expected.

Separate vs. Combined Sewers:

The data distinctly show that no strong recommendation for either type can be made at this time.

The following were not mentioned:

Silt or suspended solids coming down the river -

Every day 4,750 cubic yards goes down the river.

During dredging of Lake St. Clair and after severe storms, this reaches 50,000 cubic yards.

Boats --

Both pleasure and freight boats add oils and grease to the river.

No control over salt on the streets and roads.

Canadian pollution affects the southwest intake more than that from the United States.

Low levels of the lakes and the effect of this.

Where are the beach areas on the Detroit River below Belle Isle?

WHAT DID THE U.S.P.H.S. REALLY FIND?

DETROIT'S RECORD IS EXCELLENT

1. River Quality Protected by Detroit's Voluntary Efforts

To appreciate Detroit's contribution to pollution control, one should consider what the situation would be if sewers and treatment facilities were not available for the countless thousands of industries and

3,000,000 people in the area served by Detroit. The high quality of the Detroit River above the Rouge River, as substantiated by the U.S.P.H.S. findings, illustrates the value of having an area served by a single responsible agency.

The construction of this vast and costly system was a voluntary action of the City of Detroit prompted not only be a recognition of its responsibilities but also by its sincere desire to prevent unnecessary degradation of the Detroit River.

Detroit is continuing its program to reduce the quantities of wastes being discharged into the river and has plans for progressive improvements.

2. Municipal Effluent Comprises Less Than 1% of Flow in U.S. Waters

While the U.S.P.H.S. report notes that Detroit discharges 95% of all municipal effluent going to the river, it should also be noted that the flow from the Detroit Sewage Treatment Plant is only a small fraction of the average flow in the river as illustrated in Exhibit 1.

Detroit returns to the Detroit River a volume of water approximately equal to that removed for domestic and industrial use.

G. Remus

3. Research and Studies Needed

If all effluent discharged to the river met the proposed U.S.P.H.S. recommended criteria, there is no assurance that desirable river quality will be achieved, that aging of the lakes will be slowed or that desirable aquatic life will thrive. Nor is there any evidence that what could be achieved by secondary treatment could not be achieved equally as well or better by alternate means.

STORMWATER RUN-OFF

1. Run-off Control a Tremendous Challenge

In any contemplation of the effects or proposals for the control of stormwater run-off, consideration must be given to the fact that there are 227,920 square miles of drainage basin above the Detroit River. None of this run-off can be considered as clean water when in 1964, an estimated 4,560,000,000 pounds of fertilizers containing a considerable proportion of nitrogen and phosphorus was used in the drainage basin area. In 1963, an estimated 55,500,000 pounds of pesticides were used in the area. A tremendous quantity of animal waste bearing fecal coliform bacteria is discharged in this drainage basin. There are an estimated 177,000 private septic tanks in the six-county area. The run-off from roads and streets contains vast quantities of chlorides and crankcase oil. The physical dimensions of this problem make it obvious that collecting and treating all storm run-off will require much study and research plus huge capital expenditures.

2. Regional Cooperation and Effort Required

This is not to say that storm run-off should not presently be controlled where possible. However, control within a small limited area such as metropolitan Detroit, may not have an appreciable beneficial effect on stream quality, and may have only a very minor effect upon natural aging of the lakes, known technically as eutrophication of the lakes.

COMBINED SEWERS

1. Advantages

A combined sewer system with volumetric storage, such as is being constructed by the City of Detroit, permits the treatment of 60% of all storm run-off. For the metropolitan area having combined sewers which is served by the Detroit system, this would amount to 58,800,000,000 gallons per year, which might reach the river without treatment if the area were served by separated sewers. In its stead, only 800 million gallons of normal sanitary flow would not receive treatment, and this would occur only when the river is already loaded with polluted storm flow from high intensity storms. Instead of having approximately 90 occurrences of storm water discharges per year, the number will be reduced to approximately 10 or less.

This is very important to pollution control in the Detroit River when viewed in relation to separated sewer system studies conducted by the U.S.P.H.S. in Ann Arbor, Michigan. There it was confirmed that storm water run-off is grossly polluted, having high fecal coliform bacteria counts as well as high solids concentrations. Fecal coliform counts of 1,000,000 per 100/ml were not uncommon. Equally as important is the fact that the initial run-off from all storms carries the highest concentration of pollutants. The initial run-off of all storms can be collected and treated with a combined sewer system.

2. Disadvantages of Separate Sewers

Separated sewers do not appear to be a satisfactory means of pollution control for the following reasons:

a. The cost of a separate system in an existing area is not commensurate with the limited results that could possibly be achieved. It is estimated that the cost of sewer separation in the City of Detroit only would exceed $1,745,000,000.

b. The poor quality of storm water run-off from even the smallest storms would temporarily degrade the receiving stream an excessive amount of the time.

c. As a matterof practicality, it is virtually impossible to maintain a separated system as such without some sanitary connections or infiltration.

3. U.S.P.H.S. Recognizes Problem

Mr. James M. Quigley, Assistant Secretary of the U. S. Department of Health, Education, and Welfare, reported to 200 mayors at the National Legislative Conference of the National League of Cities, held March 30 - April 1, 1965, that no practical method exists for handling the problem of storm water run-off. See Exhibit H.

4. Detroit is Making Progress

However, Detroit is taking constructive action to limit the quantity and frequency of storm water overflows. In addition to the construction of additional storage devices, a million dollar system of monitoring equipment and remote control devices will be installed which will enable us to operate the system in a manner by which spillage can be further controlled by means of peak load anticipation. Small nuisance spills will be eliminated.

5. Corrective Action Taken on Leib Street Sewer Overflows

On April 15, 1965, we were notified of the Leib Street sewer spills by the U.S.P.H.S. Immediately thereafter, studies were commenced to determine the cause and to design corrective measures. The problem at Leib was not a case of overloaded interceptors or of improper pumping plant operation. Adjustment of the height of a diversion dam was all that was required.

By April 26, 1965, effective action had been taken to reduce the quantity, duration and frequency of spills from the Leib Street sewer. The design and construction of all other existing regulating devices are being reviewed and corrective action is being taken to correct deficiencies.

The U.S.P.H.S. addendum issued in May, 1965, incorrectly stated that allowable flow into the Mt. Elliott sewer is 180 cfs. The controlling devices are set to permit not more than 118 cfs to enter the Mt. Elliott sewer from the Dequindre interceptor.

ROUGE OUTFALL

1. Vital to Plant Reliability

Prior to the construction of the Rouge outfall, the Michigan Department of Health and the City of Detroit recognized a standby or auxiliary outfall was needed to protect the quality of the river in the event that the single Detroit River outfall failed and all flow had to be passed through regulators to the river without treatment. In studies for the 1957 program, it was also determined that during high water elevations in the Detroit River, the capacity of the plant would be restricted unless a supplemental outlet was provided for use during storm flow. Thus, the Rouge outfall was constructed for use only in an emergency or for handling excess flows during peak loads when the river elevation approaches elevation 576. This project was constructed with the prior approval of the Michigan Department of Health and the Water Resources Commission.

2. Effluent Chlorinated

Chlorination facilities are provided in

the Rouge outfall to disinfect all peak flow excesses and detention times are deemed to be adequate. The outfall is not to be considered as a bypass.

3. Performance Trials

The outfall was used during a short trial period in 1963 only for the purpose of evaluating its effect upon the river and to gain experience on operating the outfall since no way exists to evaluate these factors other than through actual operation. The first trial period was immediately discontinued when it appeared the river quality was being affected although the scheduled trial had not been completed.

Another attempt was made to experimentally operate the Rouge outfall in the spring of 1965 to evaluate its suitability for prolonged use in the event of need. This trial also had to be discontinued before we had an opportunity to experiment with possible corrective measures as problems developed. Thus, additional trial periods will be required so that downriver communities may be assured of protection in the event that it someday becomes necessary to use this outfall for its intended purposes.

4. Sampling Results Show Satisfactory Effluent

Sampling of the Rouge and Detroit Rivers during the trial period in the spring of 1965 revealed that use of the Rouge outfall had no detrimental effect on the dissolved oxygen in the Detroit River, that coliform bacteria counts in the Rouge and Detroit Rivers showed no adverse effect on stream quality, and that the Wyandotte raw water supply was not adversely affected.

STERLING STATE PARK

In August 1961, Sterling State Park was posted as unsafe for swimming by the Michigan Department of Conservation upon the advice of the Michigan Water Resources Commission, which stated that coliform bacteria from the Detroit Sewage Treatment Plant was one of the largest contributors to the pollution at Sterling State Park.

Source of Pollution

The U.S.P.H.S. found good quality water at Sterling State Park, except for certain wind directions and after storms.

It has been established by the U.S.P.H.S. that, under certain conditions, the Raisin River, as well as drainage from septic tanks in the area, is responsible for the pollution of and the closing of Sterling State Park.

BACTERIA - COLIFORM

I.J.C. Standard:

To date, the only generally accepted standard agreed on by both United States and Canada is as follows: "Adequate protection of the waters should be provided if the coliform MPN median value does not exceed 2400 per 100 ml at any point in the waters following initial dilution." -- I.J.C. Report on Pollution of Boundary Waters, 1951 - page 18.

1. D.W.S. Sampling Results

D.W.S. sampling of the Detroit River shows that the above standards are met in the area about the Rouge River since 1961. This is the area of the Detroit River that the Detroit sewage system is responsible for.

See Exhibit 2.

Also, U.S.P.H.S. Findings, page 24.

2. Confirmation of D.W.S. Results by U.S.P.H.S.

The above results were confirmed by U.S.P.H.S. Findings - page 21. "There appears to be a pronounced downward trend in coliform densities in American waters near the shore, especially during the years 1962 and 1963." U.S.P.H.S. Findings - page 131. "During dry weather, the Detroit River is of a satisfactory bacteriological quality as far as the mouth of the Rouge River. These judgments are based upon the widely used standard for safe recreation--a maximum of 1000 organisms per 100 ml--and the I.J.C. objective of 2400 organisms per 100 ml." The Detroit Sewage Treatment Plant outfall is above the Rouge.

3. Detroit River Above Rouge Meets Safe Recreation Standard

U.S.P.H.S. Findings - page 131: The above is for dry weather only. However, D.W.S. monitoring of the Detroit River shows that, after a storm, the water quality returns to normal within a day. This is due to the enormous flow in the Detroit River.

4. U.S.P.H.S. - 1962 Report

On page 48 of the 1962 report, it stated that after the Dearborn Sewage Treatment Plant was abaondoned and the sewage sent to Detroit, 99% of the sewage bacteria in the area would be eliminated.

5. U.S.P.H.S. - 1965 - Findings

In Table 8V - Summary of Treatment Efficiency, Domestic Waste Surveys, Detroit River - U.S.P.H.S. Findings, it states that 99.99% of the total coliforms, 99.99% of the fecal coliforms and 99.99% of the fecal streptococci are removed by the Detroit Sewage Treatment Plant. During the survey, the average geometric mean of the effluent coliforms was 245, equivalent to bacterial population equivalent of 23 people.

6. U.S.P.H.S. Recommended Effluent Coliform Standard

U.S.P.H.S. Summary, Conclusions and Recommendations - pages 3 and 35 - recommends an effluent with a monthly geometric mean coliform density of less than 5000 organisms per 100 ml. These standards are quite rigid. However, one must realize that at the present time, these are only recommendations. These recommended standards do not take into consideration the tremendous flow in the Detroit River and the fact that the Detroit effluent constitutes .92% of the flow in the U.S. half of the river.

7. Detroit Effluent Meets U.S.P.H.S. Recommended Standards with Present Equipment

The performance at the Detroit Sewage Treatment Plant during the U.S.P.H.S. surveys more than met the above standards with our present plant. Secondary treatment would not increase the bacterial removal. The present efficiency of the Detroit plant is satisfactory.

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See Exhibit 3.

8. Bacterial Pollution from Detroit Sewage Treatment Plant is Insignificant.

Using U.S.P.H.S. bar graphs 29V, in Findings - page 242, which shows their data in Bacterial Population Equivalent loadings at various points in the Detroit River and adding to it only the BPE of the Detroit Sewage effluent, it shows how little the effluent does affect the coliform content of the Detroit River.

One BPE is equivalent to 200 billion coliform bacteria per capita per day.

See Exhibit 4.

9. No Beach Areas in Detroit River Below Belle Isle

On page 19, U.S.P.H.S. - Summary, Conclusions and Recommendations, it states: "Pollution has necessitated that all beach areas on the Detroit River below Belle Isle be posted as unsafe for swimming."

There are no beaches on the U.S. side of the Detroit River until Lake Erie is reached.

OIL AND GREASE

1. Oil Must Be Controlled at Source

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Floating oil and grease, grease that settles or adheres to settleable solids, can be effectively removed at the Detroit Sewage Treatment Plant. However, there are sizeable quantities of soluble or emulsified oils that are released by numerous industries and homes. These oils and greases cannot be removed by a sewage treatment plant but must be controlled and removed before they enter the sewer.

2. D.W.S. Program with Industry

It will be virtually impossible to remove oils and greases from home discharge to the sewers. After July 1, 1965, the Detroit Department of Water Supply will be responsible for policing the discharges from industry. It is our intention to ask for voluntary cooperation from industry to continuously sample and analyze their discharges, and to work with the industry to improve rather than depend upon court action alone.

A program to lower soluble oil discharges to the sewer is underway with Chrysler Corporation.

Should an industry refuse to cooperate, there are sufficient city ordinances which are strong enough to force compliance.

3. Oils from Many Sources

The oil in the sewers comes from innumerable industries in the area, domestic oils and greases, garages, gas stations, two thirds of storm run-off from streets, etc. The discharges from small industries, garages, gas stations and homes, and street run-off, particularly when intermittent, are practically uncontrollable.

4. Detroit Responsible for Oils to Sewers Only

Detroit is responsible only for the oils discharged to the sewers which reach the treatment plant and not for the oils discharged by industries directly to the river. These are the responsibility of the industry under Water Resources Commission control. During heavy storms, when the storm waters exceed the capacity of the treatment plant, the oils spilled on streets, alleys and oil tank farms will flow to the river. It is impossible to control them.

5. Oils from Drainage Basin

Oils spilled on roadways or other areas throughout the entire drainage basin will reach the river during storms by storm sewers or creeks.

Ships, including oil tankers, pleasure craft and outboard motors, contribute oil to the Detroit River.

6. Standards

Other than visual observations, the U.S.P.H.S. made no analytical determinations of the oil in the river. Their recommended standard in the effluent, which is the I.J.C. objective for municipal treatment plants and industries, is 15 mg/l.

Detroit ordinances permit oil discharges to the sewers in concentrations averaging 25 mg/l with maximum discharges up to 100 mg/l.

Michigan Water Resources Commission permits oil concentrations up to 100 mg/l provided no visual evidence of oil is seen on the river. The U.S.P.H.S. recommended standard of 15 mg/l is a rough one tc meet. This can be met only by lowering soluble oil discharges at the source and by redesign of the oil and grease collection system at the Sewage Treatment Plant. Secondary treatment would not do much for oil removal.

7. Monroe Sewage Treatment Plant Exempted

Even though the oil content of the effluent of the Monroe Sewage Treatment Plant was 36 mg/l during period 2, no specific recommendation was made for limiting the oil discharge to 15 mg/l. -- U.S.P.H.S. - Summary, Conclusions and Recommendations, page 50.

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NITROGEN

1. No U.S.P.H.S. Recommended Standards

There are no I.J.C. objectives for nitrogen in the receiving waters. On page 153, U.S.P.H.S. - Findings, it states: "A commonly accepted level of inorganic nitrogen compounds (nitrates, nitrites and ammonia) above which undesirable algae blooms can be expected to occur is 0.03 mg/l."

On page 10, U.S.P.H.S. - Summary, the 0.03 mg/l is corrected to 0.30 mg/l.

2. Nitrogen Concentrations from Lake St. Clair Already in Danger Zone

Already the U.S.P.H.S. data show that the nitrogen content of the water entering the Detroit River is high enough to cause algae blooms. On page 153, U.S.P.H.S. - Findings, there are nitrate and ammonia nitrogen concentrations from .18 to .38 mg/l at the head of the Detroit River.

On page 255, 256, 257, Figures 42V, 43V, 44V, at Range DT 30.8W, which is at the head of the Detroit River, the ammonia and nitrate nitrogen content is .28 mg/l. When organic N is considered, this value becomes .42 mg/1, which is sufficient nitrogen to support algae blooms. Organic nitrogen will eventually be changed to the inorganic forms preferred by algae through decomposition and by bacteria.

3. Comparison of Nitrogen from Sewage Treatment Plant Effluent with Nitrogen in River

On page 11, U.S.P.H.S. - Summary, this statement is made: "The main source of nitrogen to the Detroit River is the effluent of the main Detroit Sewage Treatment Plant."

Using U. S. Department of Agriculture figures, we estimate there are approximately 4,560,000,000 pounds of fertilizers used per year in the 227,920 square mile drainage basin, or approximately 456,000,000 pounds of nitrogen.

Using U.S.P.H.S. data, Findings, page 238, there are 276,900 pounds of nitrogen per day coming down the Detroit River in U. S. waters alone. Canadian waters are not considered.

The Detroit Sewage Treatment Plant adds 48,769 pounds of nitrogen per day (U.S.P.H.S. Data, Table 7V.)

The nitrogen load to the river from the sewage plant is small compared to that already present.

See Exhibit 5.

Is the Detroit Sewage Plant effluent the main source of nitrogen to the Detroit River? We think not.

4. What Effect Would Secondary Treatment Have on the Nitrogen Load?

Secondary treatment will not effectively remove any of the soluble forms of nitrogen. With digestion of the sludge and return of the digested sludge, absolutely no nitrogen is removed. Some secondary treatment pilot plants have been able to remove 50% of the nitrogen, but this removal would not be as high on a plant scale.

5. Nitrogen from Other Sources than Detroit Sewage Treatment Plant

Many industries discharge nitrogen to the river as well as that from storm run-off, fertilizers, dead and decaying algae, vegetation and many other sources.

6. Research Needs to be Done on Nitrogen Removal

Continuing accelerated research, now that nutrients have become prominent may reveal improved and presently unknown methods for nitrogen removal. Secondary plants built today may not be as efficient nor easily changed when newer methods are developed.

7. Aging of Lakes

Nutrients, nitrogen and phosphorus, with subsequent algae blooms and the using up of oxygen by decaying algae are one of the main reasons for the aging of the lakes. Yet there is no yardstick to judge this by. Much of the aging is due to the nitrogen from run-off in the drainage basin.

PHOSPHATES

1. No U.S.P.H.S. Recommended Standard

There are no U.S.P.H.S. recommended standards or I.J.C. objectives for effluent discharges. On page 11, U.S.P.H.S. Summary, it states: "Soluble phosphates present in greater concentrations than 0.015 mg/l or 15 ppb reported as phosphorus, in combination with inorganic nitrogen compounds in excess of 0.30 mg/l and accompanied by satisfactory environmental conditions such as light and heat, may produce over abundant growths of algae, with concomitant odors and detriment to fish life." Insoluble phosphate can be converted to soluble phosphate.

2. Phosphorus Content of Water Entering Detroit River Already Above Danger Level

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On page 154, U.S.P.H.S. - Findings, it states that the total phosphate content at the head of the Detroit River averaged 0.03 - 0.30 mg/l. Converting this value to phosphorus, this would become 0.01 to 0.100 mg/l P, or 10 - 100 ppb phosphorus.

On page 254, Figure 41V, at Range DT 30.8W, th total average phosphate concentration is 0.19 mg/l, or 0.062 mg/l phosphorus, or 62 ppb.

Thus, it would appear that there is already sufficient phosphorus along with nitrogen entering the Detroit River from above to cause algae difficulties in Lake Erie.

3. Comparison of Sewage Treatment Plant Effluent Phosphate with That in River

On page 11, U.S.P.H.S. - Summary, it states: "The main source of phosphates in the Detroit River is the main Detroit Sewage Treatment Plant effluent."

On page 238, U.S.P.H.S. - Findings, Table 39V, it shows 72,000 lbs/day of total phosphate entering the river and 218,600 lbs/day in the lower Detroit River, a difference of 145,600 lbs/day. The Detroit Sewage Treatment Plant is said to discharge 145,000 lbs/day total phosphate, thus crediting the entire phosphate increase to the Detroit plant. Where is the industrial load? The sum of waste loadings to the river was 162,000 lbs/day.

4. Would Secondary Treatment Remove Phosphate?

The answer is no. Even well run secondary treatment pilot plants will remove only 10%. A full-scale secondary treatment plant would remove less. This small removal would have absolutely no noticeable effect on the phosphate value in Lake Erie.

5. Many Phosphates Enter River from Other Sources than Sewage Plant Effluents

Phosphates enter the river from industrial discharges, land run-off and storm water overflows.

6. Fertilizers - Source of Phosphate

Using U. S. Department of Agriculture figures, we estimate there are approximately 4,560,000,000 pounds of fertilizers used per year in the 227,920 square mile drainage basin, or approximately 274,000,000 pounds of phosphorus. A certain percentage of this would be in the run-off to the rivers and lake.

7. Aging of Lakes

Much of the natural aging of lakes is due to the inherent stream phosphates and neither secondary or tertiary sewage treatment can do anything to stop it.

8. Detergents - A Source of Phosphate

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Approximately 50% of the content of household detergents is a phosphate. The new detergents soon to be sold also contain the same proportion of phosphate. The only change is that the new ones are biodegradable and will not cause foam in streams or sewage plants.

CHLORIDES

1. No U.S.P.H.S. Recommended Standards

Neither are there any I.J.C. objectives for chloride.

2. U.S.P.H.S. Drinking Water Standards

These standards permit a chloride content of 250 mg/l for a safe drinking water. The average chloride concentrations in the Michigan waters of Lake Erie ranged from 18 to 44 mg/l.

3. No Water Interference Due to Chloride in Lake Erie

On page 279, U.S.P.H.S. Findings, it states: "Chloride levels found in the Michigan waters of Lake Erie are three to five times higher than those found at the head of the Detroit River but are not high enough to interfere with water use."

4. Daily Loading of Chlorides to River by

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Detroit Sewage Treatment Plant is Insignificant in Build-up in Detroit River

There are 3,520,000 lbs/day of chloride entering the Detroit River and 10,080,000 lbs/day in the lower river. The Detroit Sewage Treatment effluent adds 562,000 lbs/day.

See Exhibit 6.

5. Chloride Removal Difficult and Costly

To reduce the chlorides in the treatment plant effluent would approximate the removal of chloride in sea water and cost from $500 to $1000 per million gallons.

6. Salt on Streets and Roads

Practically all main roads and streets in the drainage basin are salted in the winter. During the summer months, many dirt roads are treated with calcium chloride.

Both practices contribute huge quantities of chloride to the receiving streams through storm run-off.

PLANT SURVEYS

1. D.W.S. and U.S.P.H.S. Split Survey Samples

Two 4-day plant surveys, one in June, 1963, and the other in November, 1963, were conducted at the Detroit Sewage Treatment Plant. Sixteen 12-hour composite samples were collected on both the influent and effluent and split with both laboratories receiving the same samples for bacteriological and chemical analysis.

Standard Methods procedures were used. The agreement between the two laboratories should be within the limits of experimental error.

2. Criticism of Eight-Day Survey

This eight-day survey was used by the U.S.P.H.S. to calculate the waste loadings discharged to the river, to criticize the efficiency of the Detroit Sewage Treatment Plant in removing solids and BOD, to make damaging statements regarding the operation of the plant, to state the wastes from this plant were largely responsible for the degradation of the waters of the lower Detroit River and to provide the major source of nitrogen and phosphate contributing to the fertilization of Lake Erie.

We challenge and vehemently protest these damaging statements with regard to solids and BOD removal and claim they were based on inaccurate analytical results. In many instances, the difference in results were beyond any possible experimental error. The D.W.S. results were in agreement with long term analytical results, the

U.S.P.H.S. results were not. The Detroit Sewage Treatment Plant removals were higher than those claimed by the U.S.P.H.S.

Secondly, two 4-day periods, a total of eight days,is too short a period of time upon which to make such statements. Sewage with industrial wastes is very variable and only long-term results are meaningful.

3. U.S.P.H.S. Should Conduct Long-Term Plant Survey

The U.S.P.H.S. should either accept long-term D.W.S. plant data on suspended solids, BOD and phenol removals or run a long-term plant survey with both laboratories doing the analyses and comparing results before issuing the type of statements that have been made.

SUSPENDED SOLIDS - PLANT SURVEY

1. Variation in Suspended Solids Determination by U.S.P.H.S. and D.W.S. Beyond Limits of Experimental Error

Period 1, June 16-19, 1963:

During this period, both the influent and effluent suspended solids results from both laboratories are within the limits of experimental error and we accept

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their results.

	U.S.P.H.S.	D.W.S.
Influent	220 mg/1	228 mg/1
Effluent	106 "	108 "
% Removal	53	48.3

Period 2, November 4-7, 1963:

The two laboratories agree within experimental error on the effluent suspended solids, but there is absolutely no agreement on the influent suspended solids. In fact, the minimum value found by the D.W.S. for one sample only was 295 mg/1, which was much higher than the average of 233 mg/1 found by the U.S.P.H.S. On this basis, we challenge the accuracy of the results on influent suspended solids.

	U.S.P.H.S.	D.W.S.
Influent	233 mg/1	357 mg/1
Effluent	175 "	179 "
% Removal	25	49.6
Ave. % Removal		
Periods 1 and 2	39	49.1

2. Could the U.S.P.H.S. Samples from Detroit and Wayne County Plants Have Been Mixed Up in U.S.P.H.S. Laboratory?

Samples were collected from the two plants on the same days. The average influent suspended solids results for Wayne County Sewage Treatment Plant at Wyandotte found by the U.S.P.H.S. laboratory agrees within experimental error with results found by the Detroit laboratory on the Detroit samples.

For example:

	Wayne County U.S.P.H.S.	Detroit U.S.P.H.S.	D.W.S.
Influent Sample			
November 4-7, 1963	367 mg/1	233 mg/1	357 mg/1

Since the same sample was analyzed in different laboratories, there should be better agreement. Could it be that somehow the samples from the two plants got mixed up?

3. U.S.P.H.S. Percentage Removal Too Low

The percentage removal of suspended solids shown by the U.S.P.H.S. was 39%. This value is too low and again points out the inaccuracies of 8-day plant surveys. At no time has plant operation data shown percentage removals as low as 39%.

The following percentage removal of suspended solids has been obtained in the following years at the Detroit Sewage Treatment Plant.

Year	% Removal
1962	50.4
1963	51.1
1964	58.4
1965 (thru April)	49.0

These facts are substantiated in U.S.P.H.S. Findings, page 33, Figure 14-I.

4. Secondary Treatment Would Provide No Noticeable River Improvement.

The amount of suspended solids contributed to the river by the Detroit Sewage Plant is small in comparison to the vast amount of suspended solids normally coming down the river from normal run-off after moderate storms and during dredging in Lake St. Clair.

It is futile to attempt to lower the amount of suspended solids in the lower river by instituting secondary treatment. The obvious way to decrease deposition of solids in Lake Erie would be to limit run-off, but that is virtually impossible.

This is illustrated in Exhibit 7.

5. Suspended Solids Load in River Is Not from Plant Effluent.

The amount of suspended solids from the Detroit Sewage Treatment Plant effluent is minor compared to the total amounts coming down the U.S. waters or contributed by others on the way to Lake Erie.

See Exhibit 8.

6. Aging of Lake Erie

The deposition of the suspended solids in Lake Erie when the velocity of flow decreases constitutes a natural aging of the lake and has been going on since the lake was formed.

On page 279, U.S.P.H.S. Findings, it states: "Suspended solids in Lake Erie in the vicinity of the mouths of the Raisin and Detroit Rivers and near the shores have reached levels which constitute damaging pollution. The solids settle on the lake bottom causing damage to aquatic life. By blanketing the bottom, sludge deposits are killing eggs and essential fish-food organisms and destroying spawning beds."

Since this deposition of solids has been going on since time immemorial, perhaps it is the increased use of pesticides in the past few years that is causing the damage to aquatic life.

7. U.S. Army Corps of Engineers - Letter dated July 24, 1964, Regarding Sludge Beds in the Detroit River

"The Detroit River, from Zug Island to the lower end of Bois Blanc Island (Bob-lo), has a history of little or no deposition in either the through channel (Fighting Island) or the Trenton Channel. Deposition in the amount of 100,000 c.y. is removed annually from the Lower Livingstone Channel and in the amount of 200,000 c.y. from the East Outer Channel. The material, consisting of a silty sand, is deposited in the two areas shown."

8. U.S.P.H.S. Recommended Standards

The recommended standard for suspended solids in the effluent is 35 mg/l. There is no I.J.C. objective.

SETTLEABLE SOLIDS - PLANT SURVEY

1. U.S.P.H.S. Inconsistency of Data Questioned

The following data on settleable solids were obtained by the U.S.P.H.S. and the D.W.S. laboratories on the same samples.

	Percentage Removal	
	U.S.P.H.S.	D.W.S.
Period 1	75%	95.4%
Period 2	29"	81.7"
Average	52"	87.4"

The U.S.P.H.S. results reveal low percentage removal of settleable solids in period 2, quite similar

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to the low results for suspended solids in period 2. Since the same sample is used for both determinations, and since the D.W.S. results do not show a marked drop in settleable solids, the possibility of a mix-up of samples is strengthened.

On two samples of period 2, higher settleable solids in the effluent than in the influent were reported by the U.S.P.H.S. laboratory. For samples composited hourly over a 12-hour period, this is illogical. The D.W.S. laboratory did not find this type of result.

The settleable solids percentage removal from plant records over the past few years shows no wide variation in settleable solids removal. The removals were as follows:

1962	-	93.0% removal
1963	-	90.8" "
1964	-	93.0" "
1965 (to May)	-	88.2" "

2. Comments on Two Acceptable Standard Methods

It is difficult to compare the results on settleable solids percent removal obtained by the two laboratories since different analytical procedures were used. Both methods are listed in Standard Methods and both are listed as acceptable. One is a weight method used by the U.S.P.H.S. and the other is a volume method used by the D.W.S. The latter one is usually used by sewage treatment laboratories. The Michigan Department of Health lists both procedures in their laboratory manual, but does not require a settleable solids determination since it is meaningless in determining plant efficiency.

3. Natural Aging of Lake Erie

The settleable solids contribute to the natural aging of Lake Erie by depositing solids when the velocity slows down.

4. U.S.P.H.S. Recommended Standard

The recommended standard for settleable solids is less than 5 mg/l. The I.J.C. objectives do not list a value for settleable solids.

BOD AND DISSOLVED OXYGEN

1. U.S.P.H.S. and D.W.S. Data During Plant Survey Differ.

Period 1 - June 16-19, 1963:

BOD determinations were made for this period only. The two laboratories working on the same samples agree on the average influent BOD but do not agree on the effluent results. While the accuracy on this determination is not too good, the difference in values found are beyond the limits of any possible experimental error.

	U.S.P.H.S.	D.W.S
Influent	132 mg/l	132.3 mg/l
Effluent	109 "	86.8 "
% Removal	17%	34.4%

The percentage removal found by the U.S.P.H.S. laboratory is too low. The removal found by the D.W.S. laboratory agrees with plant data. On June 17, the two samples run by the U.S.P.H.S. show higher results in the effluent than in the influent. On 12-hour composite samples, sampled every hour, one would not expect this. The D.W.S. did not find this situation. The D.W.S. chemists run this determination daily.

2. U.S.P.H.S. Results on BOD Do Not Agree With Long Term Plant Removal

The following long-term plant data are in agreement with D.W.S. survey data.

Year	Removal BOD
1962	38.1%
1963	32.3"
1964	38.8"
1965 (to May)	34.1"

G. Remus

Percent reduction since 1942 showed an average of 37%. The U.S.P.H.S. figure of 17% is too low.

See Exhibit 9.

Recently the following data were obtained from recent plant records:

		BOD	
Date	Influent	Effluent	% Removal
5/28/65	126 mg/l	64 mg/l	49%
5/29	159 "	71 "	55"
5/30	132 "	72 "	45"
5/31	108 "	78 "	28"
6/1	129 "	80 "	38"

From the above, it is contended that the U.S.P.H.S. results are in error.

3. Dual Criteria for BOD in Effluents of Industry and Sewage Treatment Plants

On page 42, U.S.P.H.S. - Summary, Conclusions and Recommendations, the recommended standard for Scott Paper Company's effluent is a BOD below 85 mg/l. The Detroit Sewage Treatment Plant is located across Jefferson Avenue, and the recommended standard for BOD is below 20 mg/l. The flow from Scott Paper Company is 43.8 MGD.

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The effluent from the Detroit Sewage Treatment Plant now meets the recommended standard set for Scott Paper Company without secondary treatment.

4. Ample Dissolved Oxygen in the Detroit River

From June 18 to September 3, 1964, the D.W.S. sampled various locations in the vicinity of the outfall and down river. Even in the upflow from the outfall there was over 8 mg/l dissolved oxygen, which for that water temperature was over 90% saturation. There was some drop in the mixed flow from the Rouge River, but the values were far above the range in which secondary treatment would be required.

See Exhibit 10.

U.S.P.H.S. sampling throughout the length of the river supported the D.W.S. findings on dissolved oxygen, and it must be remembered that their results were for the station nearest the U.S. shore which would give the lowest dissolved oxygen concentrations. Even their lowest value at Range DT 3.9 is above that requiring secondary treatment.

See Exhibit 11.

U.S.P.H.S. found the percent saturation of dissolved oxygen at the station nearest the shore to be ample. It was 90% saturation and over throughout the river, except for Range DT 3.9 where it was approximately 65%. This latter value recovered to 100% a few miles out in Lake Erie. In no way was the need for secondary treatment demonstrated.

See Exhibit 12.

5. No Apparent Justification for Secondary Treatment at Present

No lack of dissolved oxygen in the Detroit River which will use up the BOD has been demonstrated.

There is evidence to show that even with increased load, continued primary treatment presents no danger of oxygen depletion in the river. Even considering only one fourth of the flow in the river, the supply is now nearly 400% greater than the demand. With additional dispersion of the effluent in the future, there would be even less basis for considering secondary treatment because of oxygen shortage in the river.

See Exhibit 13.

6. Quotes from U.S.P.H.S. Findings on Dissolved Oxygen and BOD, Detroit River and Lake Erie

Page 150: "In no reaches of the Detroit River do levels of dissolved oxygen cause interferences with water uses." . . . "Future problems may result if oxygen-consuming waste loads increase."

G. Remus

Page 280: "Levels of dissolved oxygen in most of the Michigan waters of Lake Erie are sufficient at this time to prevent interference with water use. At the Mouth of the Raisin River, however, and to some extent in the influence of the Detroit River, significant decrease in oxygen content has occurred. If oxygen-consuming materials continue to be added to the lake from the Detroit and Raisin Rivers, DO deficits will occur and cause serious problems."

The dissolved oxygen values increased to approximately 100% saturation a few miles out in the lake.

Page 150: "In the upper Detroit River, the BOD ranged from 2 to 4 mg/l. Below the Rouge River, the average value increased to 8 mg/l but returned to the 2 - 4 mg/l range at the mouth. BOD in the Rouge River was less than 6 mg/l during the period samples." . . . "It is normal to find a BOD of 2 to 3 mg/l in river waters receiving natural drainage; a higher BOD may represent a drain on the dissolved oxygen present in the water."

This is evidence to show the river is not affected by the BOD added to it.

G. Remus

PHENOLS

1. Criticism of U.S.P.H.S. Analytical Results and Calculated Phenol Discharge to River

The eight-day average of the phenol content of the influent and effluent samples as determined by the U.S.P.H.S. is as follows:

	Influent µg/l (ppb)	Effluent µg/l (ppb)	% Removal	Lbs/Day
Period 1	809	410	49	1760
Period 2	307	197	36	765
Average	558	303	42	1260

Examination of the original data shows that the high value during period 1 was due to an extraordinarily high slug during one 12-hour composite sample. This condition is not a common occurrence and is not typical of the influent sewage. The inclusion of this one sample gives a false impression on the phenol loading of the effluent. If this one sample were omitted (and in many other analyses, one sample was), the influent sample would have shown 253 µg/l (ppb) phenol and the effluent 218 µg/l (ppb).

The above points out very strongly the fallacy of using short period sampling on sewage and sewage treatment plants with industrial wastes present.

Examination of the individual analyses during period 2 reveals that five out of eight samples showed higher phenol values in the effluent than on the influent. On samples composited over twelve hours, one would not expect results similar to the above.

2. D.W.S. Records Show Lower Phenol Content than U.S.P.H.S.

The D.W.S. laboratory determines the phenol content of the influent only since it is assumed that there is little reduction in the plant other than that absorbed or oxidized. The loadings to the river were calculated. The results were as follows:

Year	Influent (µg/l)	Lbs/Day
1962	128	571
1963	118	538
1964	49.8	237
1965 (thru April)	90	529

The above loadings are approximately half that obtained by the U.S.P.H.S. It is believed that the above loadings (and no reduction in the plant was used) are closer to the true values.

3. U.S.P.H.S. Data on Phenol Stream Loadings Show Discrepancies

On page 239, Findings, a table shows that their analytical findings show an increase of 500 lbs/day phenol in the entire Detroit River, yet the sum of waste loadings is 2,680 lbs/day.

In Figure 30V, page 243 - Findings - Average Daily Stream Loadings, it shows that there is no increase in phenol loading to the river between Range DT 20.6, which is above the Detroit Sewage Treatment Plant outfall and the Rouge River and Range DT 17.4W which is below.

On page 252, Figure 39V - Average Phenol Concentrations, it shows the same conclusion.

Where is the phenol from the Rouge River and the effluent?

Obviously something is wrong with either the analytical data or waste loadings calculations from municipalities and industry.

Could the statement on page 9 - Summary: "The major sources of phenol are the main Detroit Sewage Treatment Plant Effluent." be in error? We think so.

4. Phenols Must be Controlled at Source

Although the U.S.P.H.S. Plant Survey 8V - Summary of Treatment Efficiency - Findings, shows a phenol reduction of 42%, it is questionable if any sizeable reduction takes place in the treatment process. Phenol must be controlled at the source. This becomes the responsibility of the Department of Water Supply after July 1, 1965. It is virtually impossible to control phenol discharges from disinfectants in the home. It is recognized that the phenol discharges are too high and we will work to reduce them.

5. D.W.S. Program with Industry

The same type of program as with oil and grease, namely voluntary cooperation with industry and working with industry to lower their phenol discharge will be instigated. Also, with laggards or non-cooperating industries, the ordinances now in force will be used to their fullest extent.

Most phenols discharged to the sewers from industry come from soluble oils where they are used as bactericides, paint stripper penetrants, disinfectants, etc.

Already Chrysler Corporation has specified soluble oils without phenols and alkaline paint strippers without phenol penetrants to lower phenol discharges to the sewers. We are considering asking that all industry using the above supplies adopt similar specifications.

6. Many Phenols Discharge Directly to River

Only the phenols discharged to the sewers

G. Remus

enter the treatment plant. Many industries discharge directly to the river. This is the responsibility of the industry under the Water Resources Commission control.

7. Effect of Secondary Treatment upon Phenols

Secondary treatment is not as effective in removing phenols as elimination of them at the source. There are biological phenol reduction plants which are a type of secondary treatment; however, they are designed and operated to achieve phenol reduction only. Average secondary treatment plants of the activated sludge type remove little phenol.

8. Standards

The U.S.P.H.S. recommended standard (or I.J.C. objectives) is 20 µg/l (ppb) in the effluent. This is difficult to obtain in a large industrial and domestic system. The I.J.C. objectives for the receiving waters are 2 µg/l (ppb) average and a 5 µg/l (ppb) maximum value.

9. With few Exceptions, Phenol Concentrations in Lake Erie Meet I.J.C. Objectives

On page 27, Findings, it states: "With few exceptions, I.J.C. objectives for average phenol concentrations were met during the survey. There is no evidence that phenols in the Michigan waters of Lake

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Erie constitute interference with water use at this time."

AGING OF LAKES

1. Natural Phenomena

The aging of lakes has been taking place since geological times. It is a natural phenomena that will continue. Man may speed up the aging but, in spite of what he may do, man cannot stop it.

2. Causes of Aging

Silt coming down a stream deposits its load where the velocity slows down, usually in a large body of water. Examples of this are the formations of deltas at the Mouth of the Mississippi and Nile Rivers. Another example is the filling of man-made lakes such as Lake Meade.

By blanketing the lake bottom with silt, claims are made that aquatic life is damaged.

Nutrients such as phosphates and nitrates are the prime causative agents. They fertilize the lake, causing algae blooms, if sufficient sunlight and heat are present. Algae will produce oxygen and serve as a source of food for fish. However, as the algae multiply and die, they settle to the bottom, decay, releasing the nutrients again. Oxygen from the water is used to accomplish this and thus a layer of oxygen deficient water rests just above the deep portions of the lake. This oxygen deficient layer will cause fish-food organisms to die, thus affecting the fish population.

3. Accelerated Aging of Lake Erie

Over the past 15 years, the aging of Lake Erie is said to have speeded up. Increased fertilization is alleged to be the cause. While population and industry have increased their discharge of nitrates and phosphates to the streams, so has larger and larger quantities of fertilizers and pesticides been used, not only in cities but on all farm lands. A certain percentage is bound to run off to the collecting stream. Perhaps the increased use of pesticides, more than silt, is the damaging agent to aquatic life. The increased use of detergents with their phosphates also may be the cause of the acceleration in aging.

Lake Ontario has approximately the same chemical content as Lake Erie since it receives most of its water from Erie. Yet Lake Ontario is not aging as fast as Lake Erie. Lake Erie, a shallow lake, is warmer than Lake Ontario. Perhaps this is the difference between the two lakes. If so, not very much can be done about it. The aging process is so slow and so little is known about it that there are no concrete measuring sticks to go by.

4. Effect of Secondary Treatment Upon Aging Process

There is little that secondary treatment can do to stop the aging process. There are sufficient nutrients coming into the Detroit River to cause fertilization of Lake Erie already. Secondary treatment would lower phosphates and nitrates only slightly. BOD is not a problem in aging but the nutrients are.

IS SECONDARY TREATMENT NOW THE ANSWER FOR LAKE ERIE?

1. Effect of secondary treatment on

a. Bacteria - The recommended standard can be met easily with the present plant. Secondary treatment would not lower the bacteria discharge.

b. Oils - The only effective way to reduce oils and grease is at the source. This will be done. Secondary treatment would not help.

c. Phenols - Phenols also must be reduced at the source. This will be done. Secondary treatment would lower them only slightly.

d. Nitrogen - Without digestion, secondary treatment may reduce the nitrogen from 0 to 50%. Soluble nitrogen in the form of ammonia or nitrates will not be removed. With digestion, no nitrogen is removed.

e. Phosphorus - Secondary treatment will remove 10% or less of the phosphates.

f. Chlorides - Secondary treatment would not remove.

g. Toxic Metals - Secondary treatment would not remove. Most of these must be prevented from entering the sewers.

h. Suspended Solids - Secondary treatment would remove from 60 to 95% of the suspended solids. Compared to the suspended solids coming down the river, the reduction is minor.

i. Settleable Solids - These would be effectively removed.

j. BOD - The BOD would be lowered but this is no problem in the Detroit River and Lake Erie.

2. Present Loadings to River and Effect on Lake Erie

On page 279, U.S.P.H.S. - Findings, it states that the present loading of the following does not interfere with water use - phenols, chlorides, ABS, pH, cyanide, iron, toxic metals, dissolved oxygen.

3. U.S.P.H.S. Recommended Standards

These recommended standards do not recognize the natural loading of the Detroit River nor the waste assimilating power of the river without harmful effect.

4. Effect of Suspended Solids

While secondary treatment does an effective job in removing these, it is questionable if an effluent with 35 mg/l of suspended solids would have any effect on Lake Erie and the preservation of desirable aquatic life. The removal of about 450,000 lbs/day out of approximately 11,000,000 lbs/day suspended solids coming down the river naturally would have small effect. The aquatic life may be killed by the increased use of pesticides.

5. Effect of Nutrients

Nutrients are the real culprits in the Lake Erie problem. Neither phosphates or nitrates is effectively removed in conventional secondary treatment plants.

6. Removal of Nutrients - Tertiary Treatment

If the nutrients are not effectively removed in the secondary treatment plant, U.S.P.H.S. - Summary, Conclusions and Recommendations, page 35, states that a technical committee should evaluate nitrogen and phosphate removal and, if further facilities are necessary, the conferees will consider making such a recommendation. This is tertiary treatment, which is not properly developed as yet and extremely costly.

7. Performance Data - Secondary Treatment Plants

Several large secondary treatment plants have no difficulty meeting the recommended U.S.P.H.S. standards; however, several plants in operation have. An example of the latter is the District of Columbia Water Pollution Control Plant. Their 1963-64 operating data on the effluent show:

Suspended Solids - 46.1 mg/l
BOD - 49.9 "

Percentage removals were 66.6 and 69.2, respectively.

Several activated sludge treatment plants receiving shock loads of industrial wastes report extreme operating difficulties with some plant failures.

8. Raisin River Dissolved Oxygen

One of the reasons for secondary treatment is to prevent oxygen depletion in the Detroit River and Lake Erie. The Detroit River is not a problem but the Raisin River is. However, on page 50, U.S.P.H.S. -

Summary, Conclusions and Recommendations, approval is given to maintain the dissolved oxygen in the Raisin River at a minimum level of 3 mg/l. This is another example of a dual standard.

9. Huron River Sewage Treatment Plants

With the exception of two small primary plants, Rockford and Flat Rock, which have adequate chlorination and few people, the remainder of the cities and towns have secondary treatment.

On page 295, U.S.P.H.S. - Findings, Table 16 VI, the Huron River shows average stream concentrations of many wastes such as chlorides and phosphates to be higher than that in the Detroit River and nitrogen and phenols to be in approximately the same range.

The coliforms were also quite high. Evidently, secondary treatment has not helped the Huron River. The question is: What would secondary treatment do for the Detroit River? Judging by the evidence, it would do very little at the present time.

COMMENTARY FOR EXHIBITS 1 THROUGH 13

EXHIBIT 1 -- River Flow vs. Flow from Sewage Treatment Plant

G. Remus

The U.S.P.H.S. Report states that effluent from the Detroit Sewage Treatment Plant comprises 95% of the municipal effluent being discharged to the Detroit River. It should simultaneously be noted that this same quantity of effluent is equivalent to less than 1% of the average flow in the river.

EXHIBIT 2 -- Coliform Median Values vs. I.J.C. Objectives

The objective of the I.J.C. is to hold the bacterial contamination of the Detroit River to a coliform median MPN value of less than 2400 coliform bacteria per 100 mls. The water over and around the Sewage Treatment Plant outfall has more than met this criteria for the past four years while no improvement has been noted on the Canadian side.

EXHIBIT 3 -- Sewage Treatment Plant Efficiency

This chart portrays the present efficiency of our Sewage Treatment Plant which, according to U.S.P.H.S. sampling data, receives the bacterial population equivalent of 3,250,000 daily but discharges an average of only 23 BPE according to U.S.P.H.S. records. This should suffice to show that we do not take our responsibilities lightly and are already contributing greatly to maintaining the purity of the Detroit River.

G. Remus

EXHIBIT 4 -- Negligible Effect of Sewage Treatment Plant on Coliform Loading in River

U.S.P.H.S. records show that the average daily bacterial population equivalent (1 BPE = 200,000,000,000 coliform organisms) of the Sewage Treatment Plant effluent is only 23. Considering that this represents a removal of better than 99.99%, further reduction of this figure would be warranted only if other sources of gross coliform pollution are detected and corrected.

EXHIBIT 5 -- Proportionate Effect of Sewage Treatment Plant on Nitrogen Loading in River

This graph illustrates that there is a comparatively heavy nitrogen load in the river under normal conditions which is in no way related to treatment plant effluent, but is probably the result of commercial fertilizers and other materials being washed off the land. Secondary treatment will not ordinarily remove nitrogen from the effluent.

EXHIBIT 6 -- Proportionate Effect of Sewage Treatment Plant on Chloride Loading in River

As can be seen here, a comparatively great amount of chlorides is coming down the river at all times. Complete elimination of chlorides in our effluent would make virtually no noticeable change in the river even if a practical method for their removal were known. Much of the chloride loading comes as a result of the use of salt for traffic safety.

EXHIBIT 7 -- Proportionate Effect of Sewage Treatment Plant on Suspended Solids in River

The futility of trying to clean up the river by instituting secondary treatment is clearly shown here. In view of the vast amount of solids passing over our outfall, there is insufficient justification for secondary treatment considering that the improvement would be virtually undetectable. Normal run-off from the land and storm run-off would easily negate a $129 million dollars worth of effort. The obvious place to start is on the collection and run-off problem, but the U.S.P.H.S. admits it is not sure what the economical answer would be. Eutrophication of Lake Erie would hardly be slowed by secondary treatment.

EXHIBIT 8 -- Negligible Effect of Sewage Treatment Plant on Suspended Solids in River

This chart also shows the amount of suspended solids contributed by the Sewage Treatment Plant is minor compared to the amount of solids coming in upstream or to the amount added by others.

EXHIBIT 9 -- BOD Removal Record for Sewage Treatment Plant

G. Remus

The Summary, Conclusions and Recommendations of the U.S.P.H.S. report labeled our BOD reduction of 17% as "POOR". Our analysis of a portion of their same samples showed a reduction of 34.4%. Shown here is a graph of our average percent BOD reduction for 22 years. The long-term average appears to be about 37%, which cannot be called "poor".

EXHIBIT 10 -- Sufficiency of Dissolved Oxygen in River - D.W.S.

From June 18 to September 3, 1964, our forces sampled various locations in the Detroit River and found that even in the upflow from our outfall there was over 8 ppm dissolved oxygen which, for that water temperature, is over 90% saturation. There was some drop in the mixed flow from the Rouge River, but the values did not come anywhere near the range where regulatory agencies might require secondary treatment.

EXHIBIT 11 -- PPM Dissolved Oxygen Not Critical

U.S.P.H.S. sampling more than supported our findings. This chart shows even at points nearest the U.S. shore, which undoubtedly would be the worst condition, the dissolved oxygen was at or above 8 ppm (which is in the range of 100% saturation) in the vicinity of our outfall. Even downstream the oxygen concentration and the oxygen demand obviously do not emanate from our Sewage Treatment Plant effluent.

EXHIBIT 12 -- % Saturation Dissolved Oxygen Not Critical

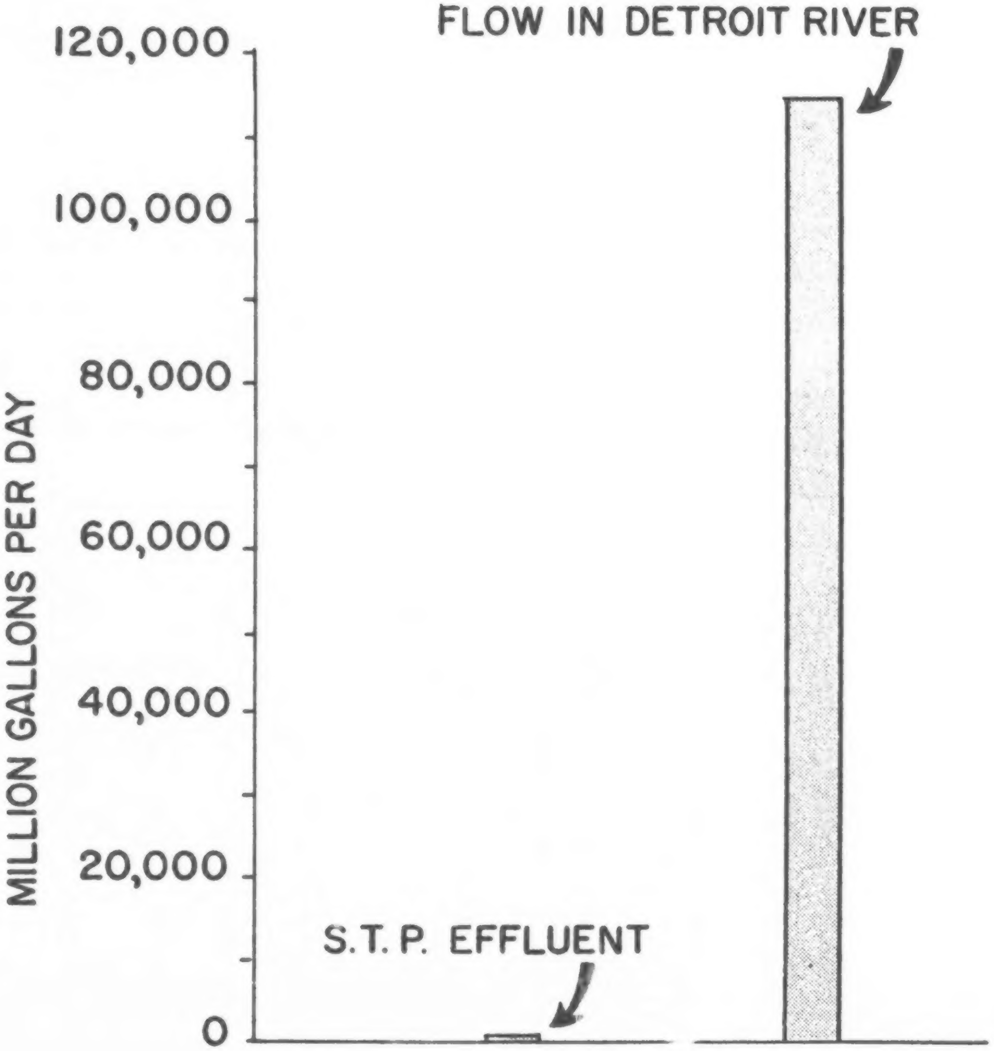
Again the U.S.P.H.S. found that at stations nearest the U.S. shore, the percent saturation was for the most part near 90% and in no way demonstrated any need for secondary treatment. Though a level of approximately 65% was reached at Range DT 3.9, additional data showed that within the next several miles into Lake Erie there was rapid recovery.

EXHIBIT 13 -- Dissolved Oxygen Depletion Not Imminent

This graph shows that even with increased load,continued primary treatment presents no danger of oxygen depletion in the river. Even considering only one fourth of the flow in the river, the supply of oxygen is now nearly 400% greater than demand. With additional dispersion of the effluent in the future, there would be even less basis for even considering secondary treatment. The condition of the river is by no means oxygen critical nor is there any danger of it becoming so as a result of primary treatment plant effluent.

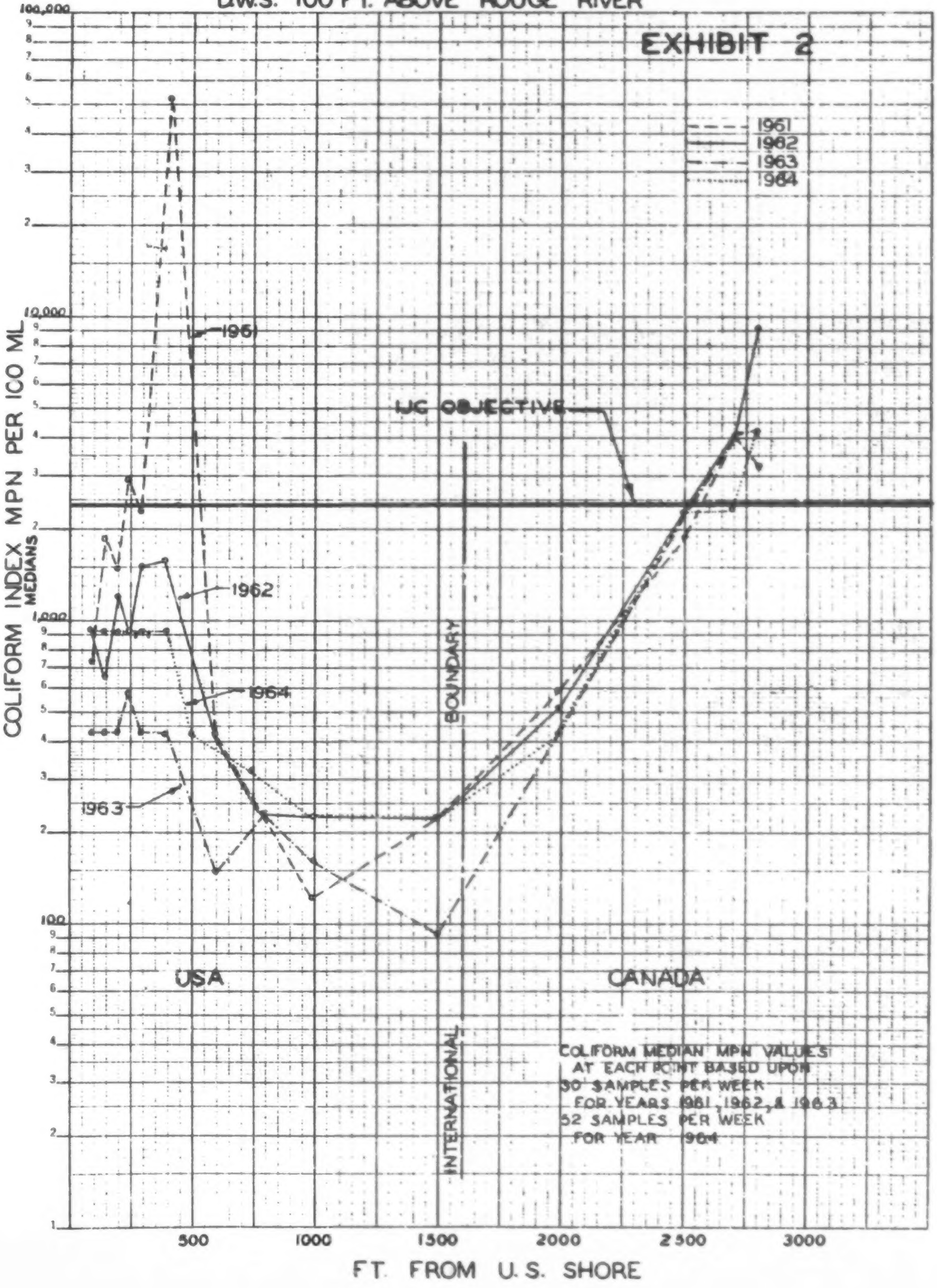
(Exhibits 1 Through 13 follow.)

EXHIBIT I

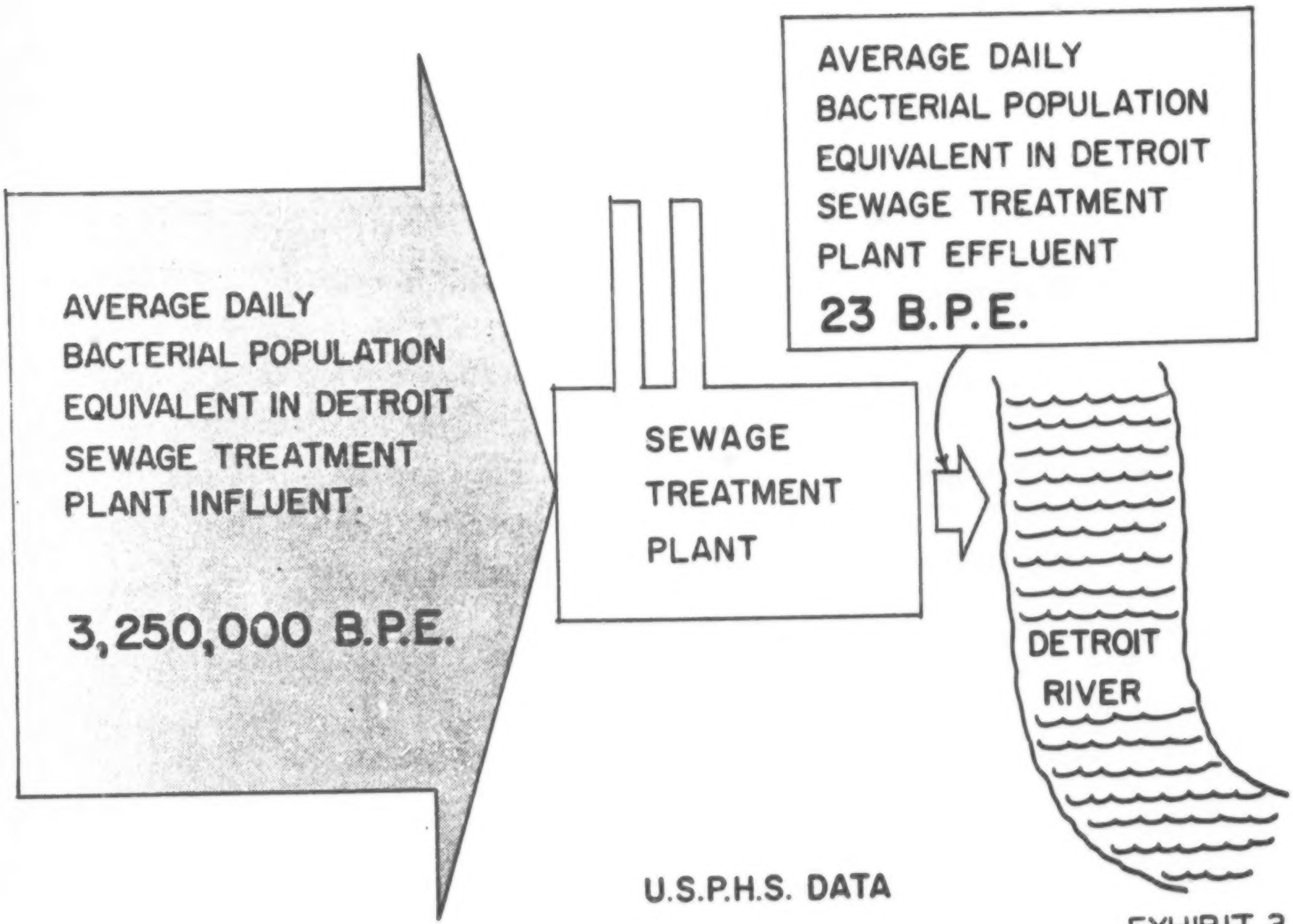


RELATION OF DETROIT SEWAGE TREATMENT PLANT DISCHARGE TO AVERAGE DETROIT RIVER FLOW.

RANGE 6A ZUG ISLAND, ACROSS OUTFALL TO CANADA
D.W.S. 100 FT. ABOVE ROUGE RIVER



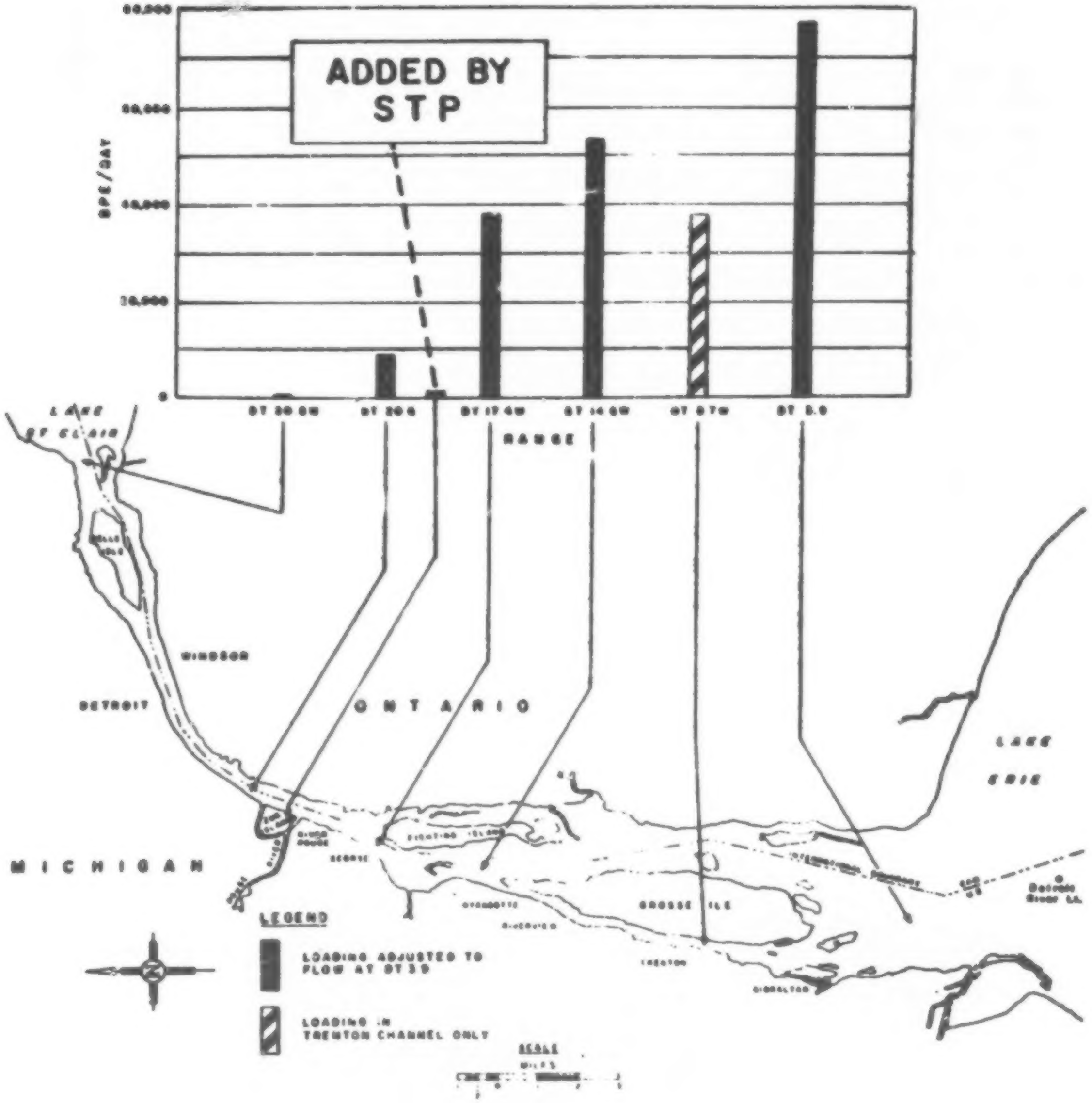
COLIFORM MEDIAN MPN VALUES
AT EACH POINT BASED UPON
30 SAMPLES PER WEEK
FOR YEARS 1961, 1962, & 1963.
52 SAMPLES PER WEEK
FOR YEAR 1964


AVERAGE DAILY
BACTERIAL POPULATION
EQUIVALENT IN DETROIT
SEWAGE TREATMENT
PLANT INFLUENT.
3,250,000 B.P.E.
SEWAGE
TREATMENT
PLANT
AVERAGE DAILY
BACTERIAL POPULATION
EQUIVALENT IN DETROIT
SEWAGE TREATMENT
PLANT EFFLUENT
23 B.P.E.
DETROIT
RIVER

U.S.P.H.S. DATA

EXHIBIT 3

EXHIBIT 4

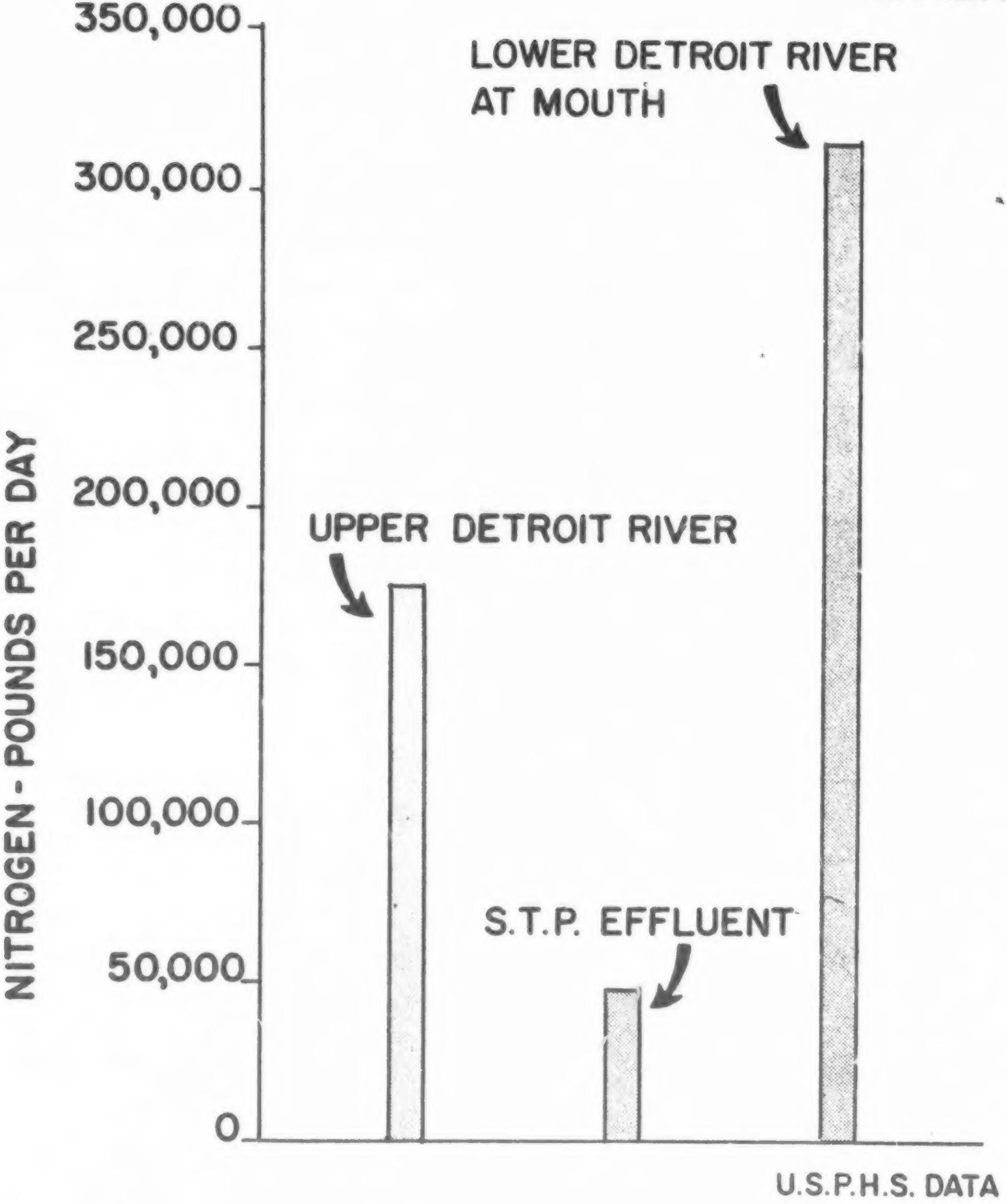


AVERAGE DAILY STREAM LOADINGS
COLIFORM ORGANISMS

DETROIT RIVER

U. S. P. H. S. DATA

EXHIBIT 5



TOTAL NITROGEN IN UNITED STATES PORTION OF THE DETROIT RIVER.

2 O

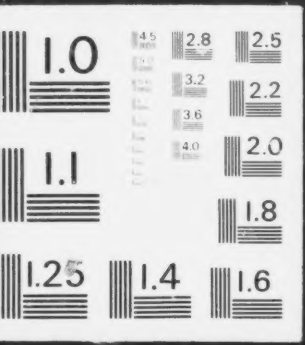
P

229

OF 5

PB

9325


1.0
4.5
2.8
2.5
3.2
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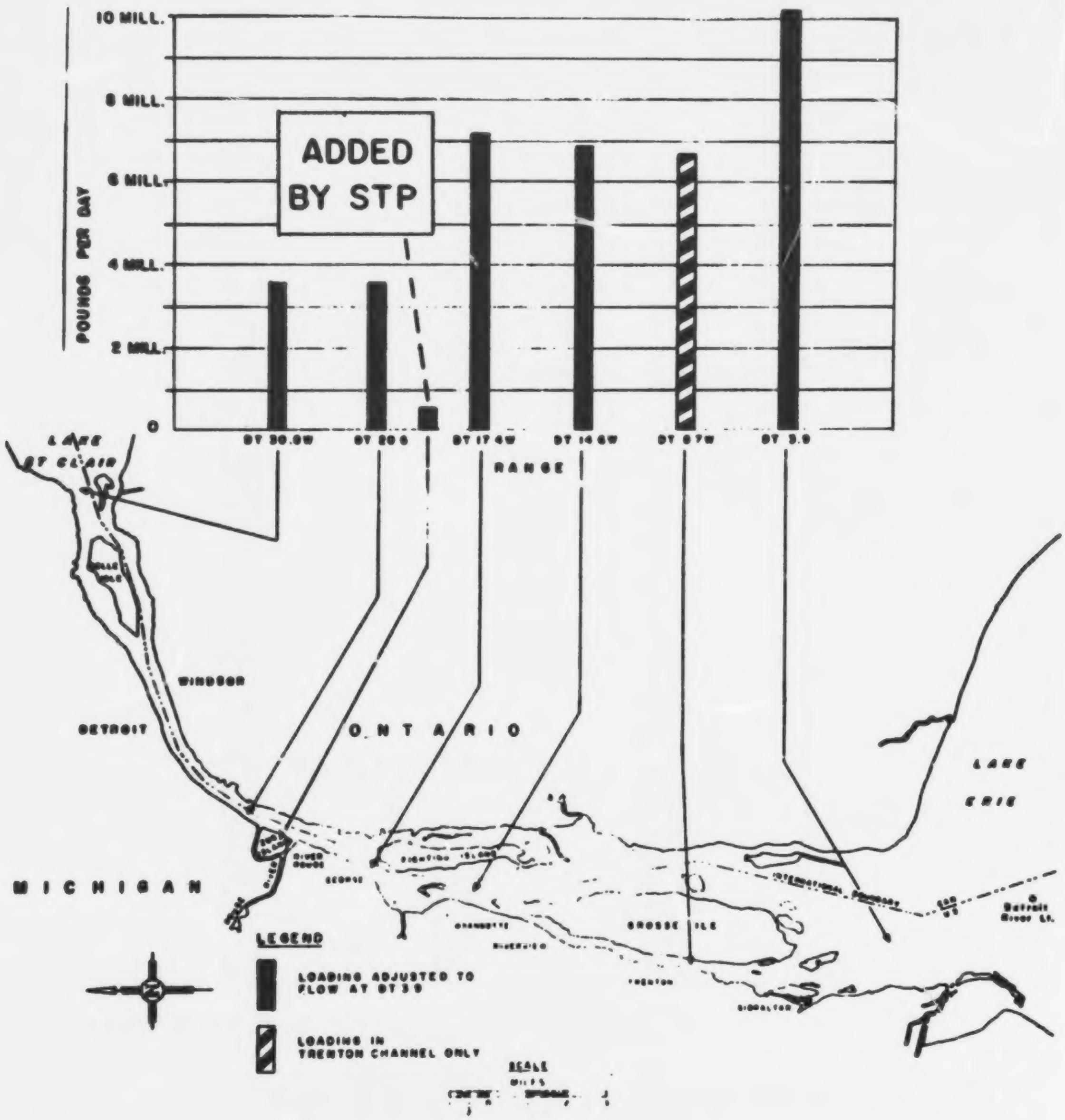
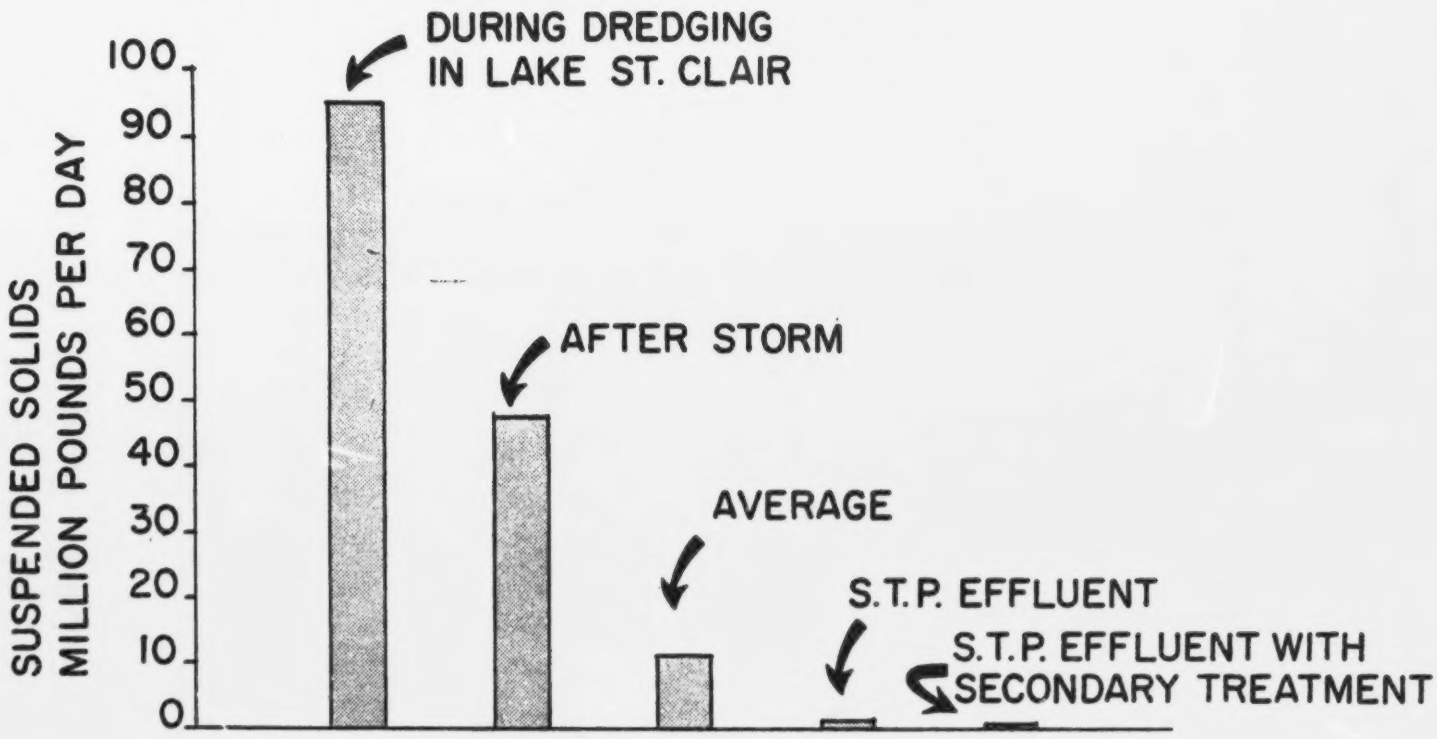
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6

EXHIBIT 6



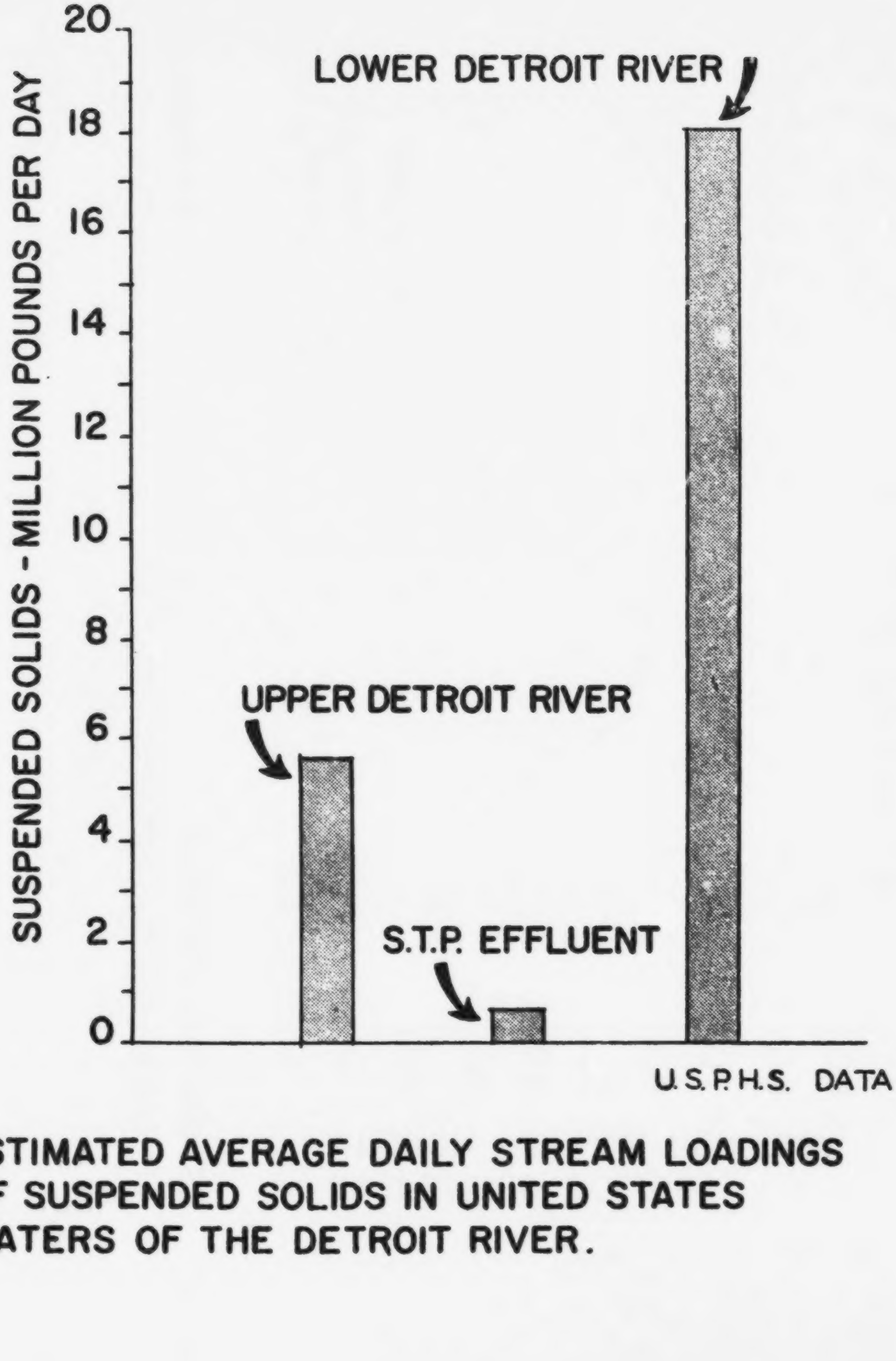
AVERAGE DAILY STREAM LOADINGS
CHLORIDES
DETROIT RIVER
U.S.P.H.S. DATA



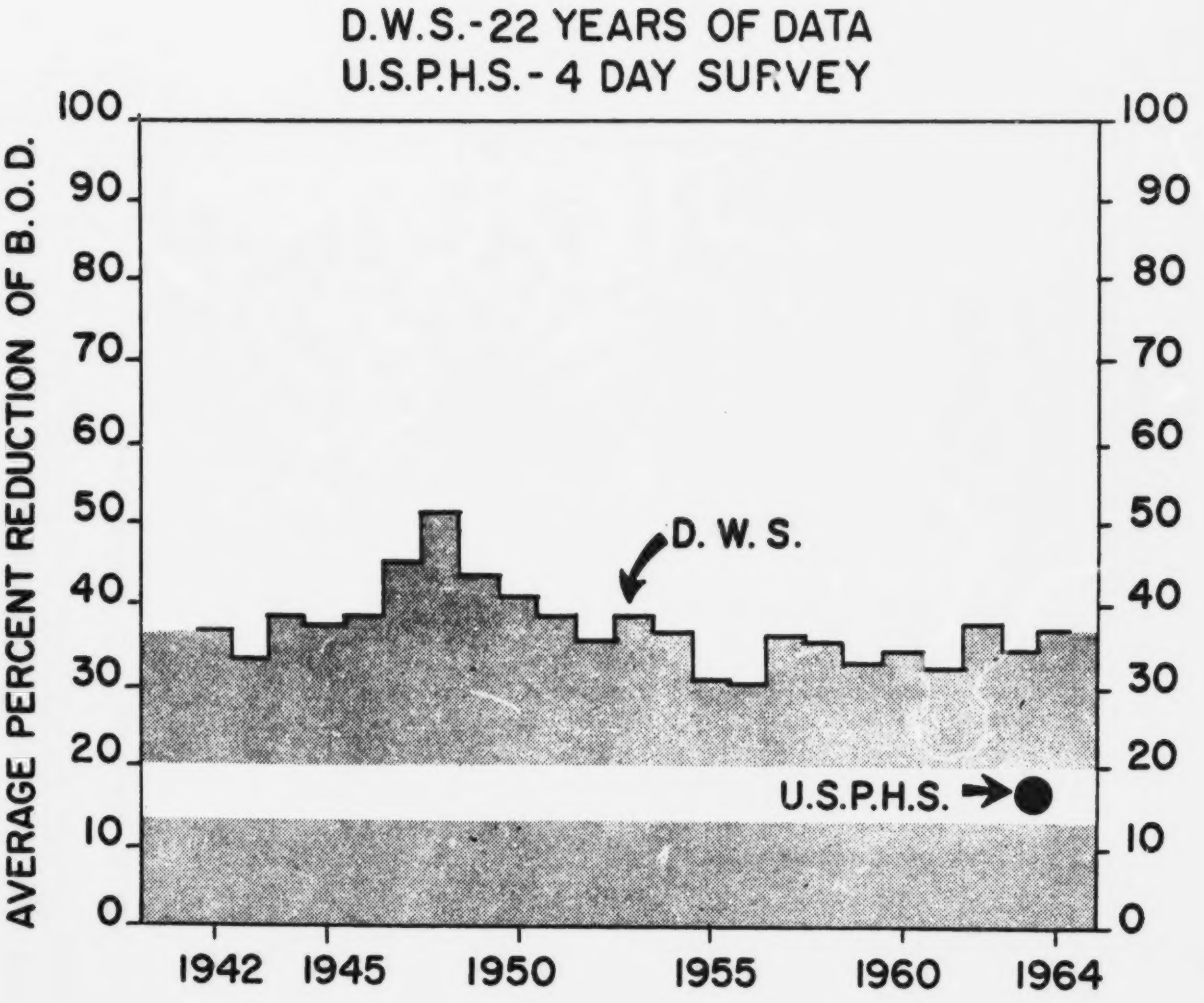
ESTIMATED AVERAGE DAILY STREAM LOADINGS OF SUSPENDED SOLIDS AT RANGE 6A IN UNITED STATES AND CANADIAN WATERS OF THE DETROIT RIVER.

EXHIBIT 7

EXHIBIT 8



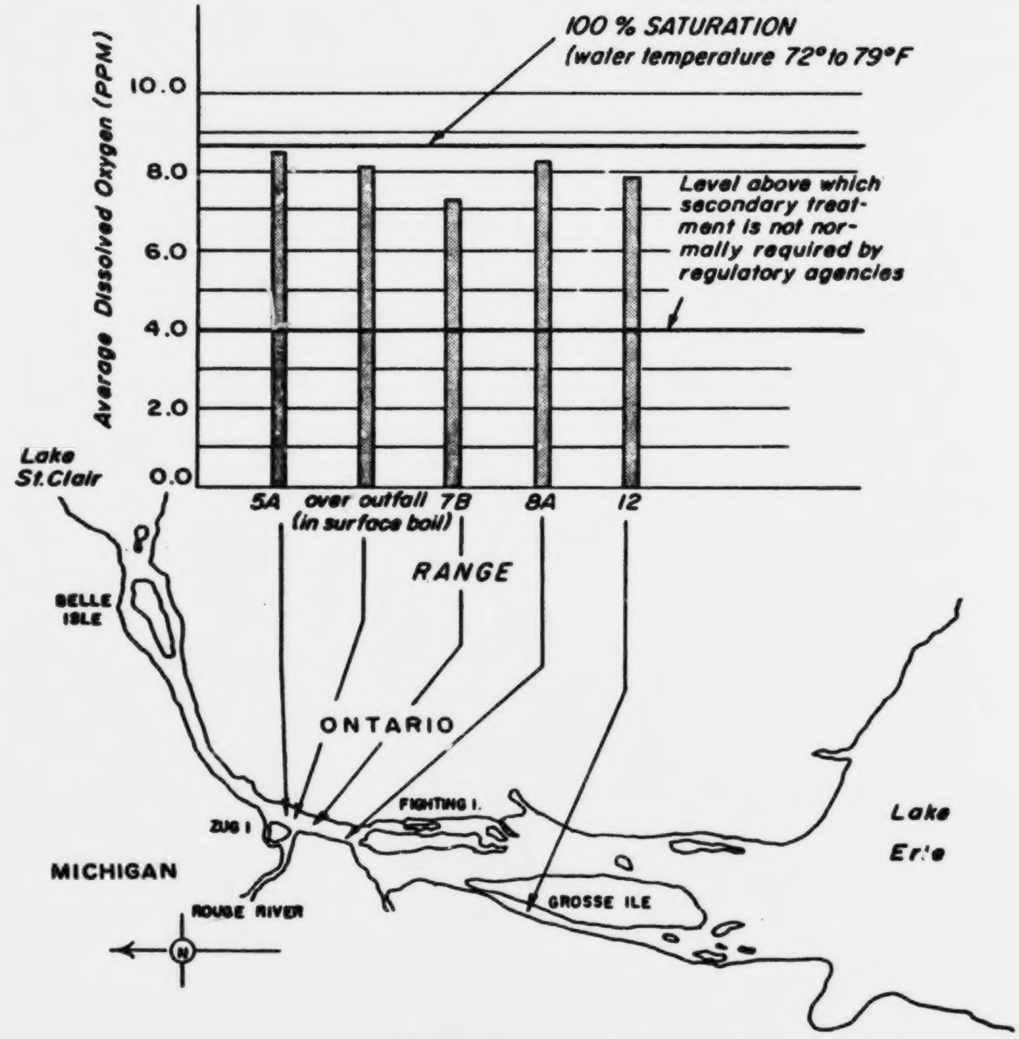
ESTIMATED AVERAGE DAILY STREAM LOADINGS OF SUSPENDED SOLIDS IN UNITED STATES WATERS OF THE DETROIT RIVER.



YEARLY AVERAGE PERCENT REDUCTION OF B.O.D. AT DETROIT SEWAGE TREATMENT PLANT.

EXHIBIT 9

EXHIBIT 10

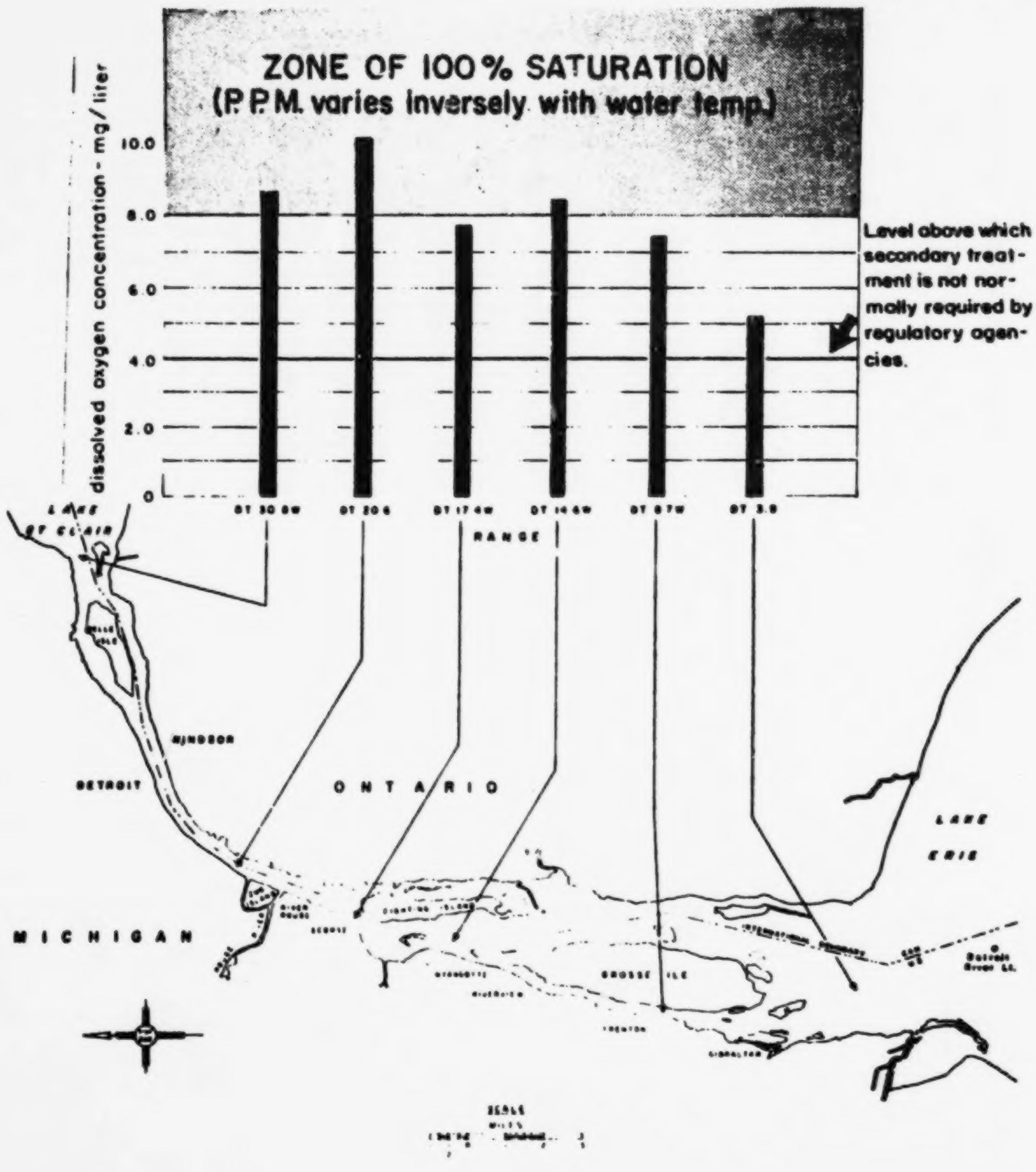


DETROIT DEPARTMENT OF WATER SUPPLY

AVERAGE DISSOLVED OXYGEN CONCENTRATIONS

STATIONS 100ft. AND 500ft. FROM U.S SHORE OF DETROIT RIVER
June 18 to Sept. 3, 1964

EXHIBIT 11

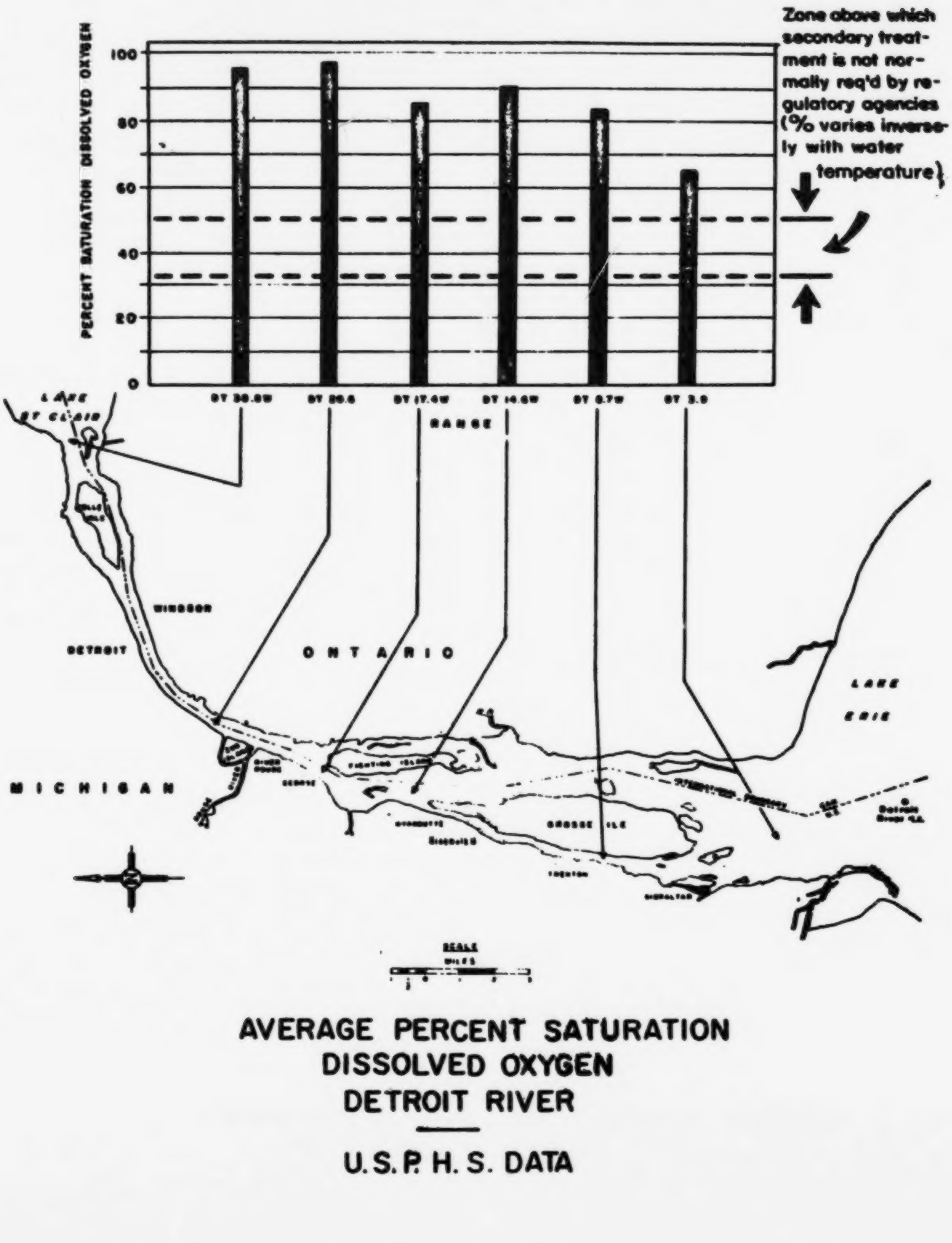


DETROIT RIVER

MINIMUM DISSOLVED OXYGEN CONCENTRATIONS

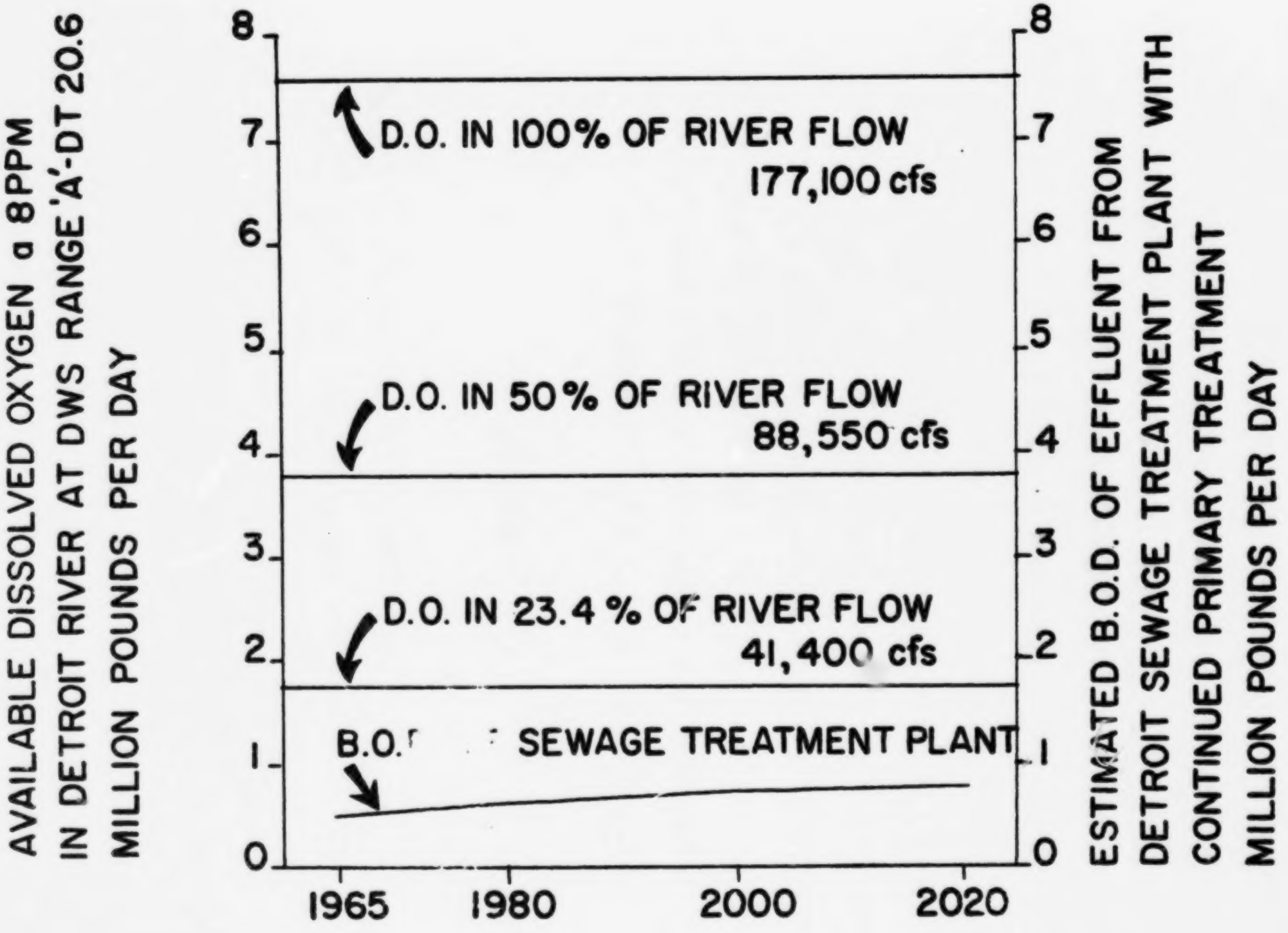
U.S.P.H.S. DATA

EXHIBIT 12



AVERAGE PERCENT SATURATION
DISSOLVED OXYGEN
DETROIT RIVER

U.S.P. H.S. DATA



RELATION BETWEEN DISSOLVED OXYGEN IN THE DETROIT RIVER AND THE SEWAGE PLANT EFFLUENT B.O.D.

EXHIBIT 13

EXHIBIT "A"

DETROIT SEWAGE DISPOSAL SYSTEM ENLARGEMENT AND IMPROVEMENT PROGRAM

July 22, 1957

(AMENDED - August, 1963)

AMENDMENT

AMENDMENT - August 1963 - to the Detroit Sewage Disposal System, Enlargement and Improvement Program dated July 22,1957.

In the last paragraph of the introduction add "and the Clinton River Valley - Dequindre Road Interceptor District (Shown on Exhibit 1, Appendix - Proposed Service Area Map, Revised August,1963).

To the section entitled "Schedule" add: "1964-1975 Additional Interceptor Dequindre Road Sanitary Sewage Interceptor, Fourteen Mile Road to the Clinton River Valley will not affect the rates proposed herein inasmuch as a special charge to reimburse the Water Board for the construction, operation and maintenance of the Dequindre interceptor will be collected from the users thereof".

Revise Exhibit 1 to show the Clinton River Drainage Basin - Dequindre Road District in the Proposed Service Area.

DETROIT SEWAGE DISPOSAL SYSTEM ENLARGEMENT AND IMPROVEMENT PROGRAM

The Sewage Treatment Plant and the sewerage interceptor system now requires additions and improvements to provide:

(a) Proper facilities to handle the continually increasing sewage and ground garbage load.

(b) Proper facilities to control the excessive fly ash now being discharged into the atmosphere. The City is under notice that it is violating the law on this matter.

(c) Improved treatment methods. As the plant is called upon to handle more and more solids, better methods of treatment are needed to remove a greater percentage of solids from the sewage, thus lessening the amount going to the river.

(d) Added reliability and proper capacity to the interceptor system. Work has been deferred on this item for some time due to lack of funds.

At the same time these steps are being taken, it is recommended that certain additional areas be connected to the system, namely: Dearborn, West Wayne County, and Southeastern Oakland County (Shown on Exhibit 1, Appendix - Proposed Service Area Map). This area addition will broaden the revenue base and make greater use of the plant's designed capacities.

Historical

The Detroit Sewage disposal system was placed in service in 1940, and the total cost was $27,379,000 including plant and interceptor. Up to 1956 additions and improvements were added costing about $4,000,000. In 1956 further improvements were made costing $6,500,000. The present indebtedness amounts to $7,220,000 in the form of revenue bonds.

The sewage disposal system serves Detroit and 34 adjacent communities. Exhibit 2, Appendix, indentifies the communities that are now served. A total of 2,677,000 people are now being served; 1,909,000 of these are in Detroit and 758,000 in the suburbs.

Garbage

The ground garbage load is heavy and increasing continuously because of the expanding use of domestic and commercial garbage grinders.

Some suburban areas have practically 100 per cent domestic garbage ground disposal service and the use of these units in Detroit is increasing rapidly.

The original design of the Sewage Treatment Plant did not provide for garbage disposal. This program provides the service of domestic and commercial ground garbage disposal for all the area. Curves shown on Exhibit 3, Appendix, illustrate the importance of the pertinent factors involved, such as sewage flow, sewage solids and garbage, and what effect the years will have.

Fly Ash

The Board of Water Commissioners are and have been under notice for some time that the present operations of the Sewage Treatment Plant are in violation of the law because excessive fly ash is ejected to the atmosphere as the result of our sewage solids burning operations at 9300 West Jefferson. Fly ash is spread throughout the neighborhood resulting in many complaints. Improved combustion equipment with proper appurtenances must be constructed to correct this condition.

Improved Treatment

The sewage treatment load has gradually increased. The increase is now accelerated for a variety of reasons. Principal factors are addition of ground garbage, increased per capita use of water and more industrial wastes. This means the transportation of more and more tons of waste through the sewerage system to the treatment plant. An improved treatment method must be considered, under any conditions, to reduce the tonnage of wastes discharged to the Detroit River. Chemical precipitation is the method most compatible with a comparatively moderate capital expenditure, but it entails a much higher operating cost.

Schedule

To properly handle the sewage-garbage load, additional settling basins, filters, incinerators, treatment facilities, and interceptor improvements, with appropriate housing enclosures, have to be constructed.

A schedule of construction with estimated costs, by years, follows:

1958-61

Plant Additions

Four more sedimentation tanks.

Enlarged effluent collecting channel.

Overflow channel to Rouge River.

Second filter building.

Ten more vacuum filters.

Building for incinerating kiln.

One incinerating kiln.

Fly ash collecting equipment for this kiln.

1958-61

Interceptor Additions and Improvements

Second siphon at Fort and Bayside.

Evergreen section of west interceptor - Ford Road to Warren.

Regulator and diversion works at West McNichols and Rouge River.

Control gates on Conner Creek outlet.

Alteration of Conner Creek intake well as a sanitary pumping station.

Total - $20,000,000.

1961-65

Plant Additions

Second filter building.

Six more vacuum filters.

Second incinerating kiln.

Fly Ash collecting equipment for this kiln.

Interceptor Additions

Additional regulation and diversion works on master plan - relief outlet.

Total - $ 5,767,000.00

1965-75

Plant Additions

Three more sedimentation tanks.

Four more vacuum filters.

Set up dismantled incinerator.

Install improved treatment process.

(Estimate based on chemical precipitation process.)

Interceptor Additions

Additional regulation and diversion works on master plan - relief outlets.

Total - $ 7,027,000.

Grand Total - $32,794,000.

Construction costs based on E.N.R. index of 808 for Detroit.

Recommendations are:

That the above schedule be adopted and that we be authorized at this time to spend $20,000,000. and that money be spent as required to carry out the program as scheduled. Three million dollars have accumulated towards this program. The remaining seventeen million dollars will be financed by the issuance of revenue bonds, to be issued as needed.

Increased operating costs and debt service result because of the improvement to provide better service. Many localities are already receiving considerable garbage disposal service, which is not included in the present sewage rate. To provide for this extra service and to adjust for these inequalities, a rate adjustment is recommended of 10 cents per 1000 cubic feet on the basis of water used.

The program is designed to provide Sewage Treatment facilities for 4 million people by 1980; approximately 2 million in Detroit and 2 million in the adjacent suburban areas.

The average Detroit family uses approximately 3000 cubic feet of water every three months, therefore, the proposed increase of 10 cents per 1000 cubic feet would add 30 cents to that family's quarterly water bill.

Present rate -- Total Water and Sewage -- Per 1000 cu. ft.

		Detroit*	Suburban* Municipalities	Suburban* Individual
First	10,000 cu. ft. per month	$1.05	$1.19-½	$1.23
Next	90,000 cu. ft. per month	.87	1.00-½	1.04
All over	100,000 cu. ft. per month	.75	.87-½	.91

Proposed Rate -- Total Water and Sewage --

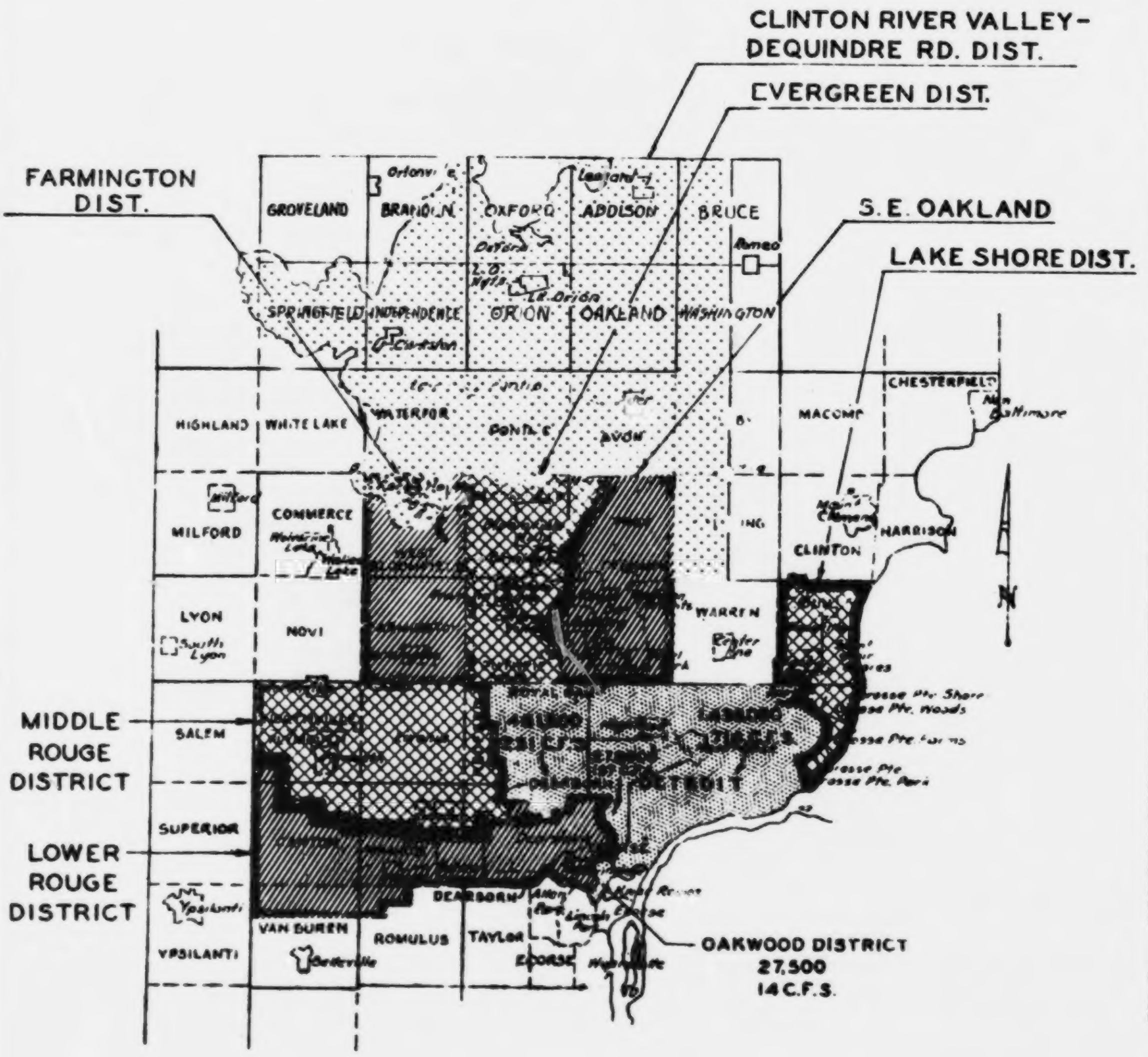
Per 1000 cu. ft.

First	10,000 cu. ft. per month	$1.15	$1.29-½	$1.33
Next	90,000 cu. ft. per month	.97	1.10-½	1.14
All over	100,000 cu. ft. per month	.85	.97-½	1.01

* Plus service charge.

Exhibit 4 shows the general plan of additions as they will be made at the Sewage Treatment Plant and how the improvements will cover the area now owned by the Department.

(Exhibits 1, 2, 3A, 3B, 3C, 3D, 3E and 4 follow.)


CLINTON RIVER VALLEY-
DEQUINDRE RD. DIST.
EVERGREEN DIST.
FARMINGTON
DIST.
S.E. OAKLAND
LAKE SHORE DIST.
GROVELAND
BRANDON
OXFORD
ADDISON
BRUCE
Ortonville
Oxford
Romeo
Lake Orion
SPRINGFIELD
INDEPENDENCE
ORION
OAKLAND
WASHINGTON
Clarkston
HIGHLAND
WHITE LAKE
WATERFORD
PONTIAC
AVON
MACOMB
CHESTERFIELD
New Baltimore
MILFORD
Milford
COMMERCE
CLINTON
Mount Clemens
HARRISON
LYON
South Lyon
NOVI
WARREN
Center Line
Grosse Pte. Shores
Grosse Pte. Woods
Grosse Pte. Farms
Grosse Pte.
Grosse Pte. Park
MIDDLE
ROUGE
DISTRICT
SALEM
DETROIT
SUPERIOR
LOWER
ROUGE
DISTRICT
Ypsilanti
DEARBORN
Allen Park
Lincoln Park
River Rouge
Ecorse
VAN BUREN
ROMULUS
TAYLOR
ECORSE
Belleville
Wyandotte
YPSILANTI
OAKWOOD DISTRICT
27,500
14 C.F.S.
N

PROPOSED SERVICE AREA

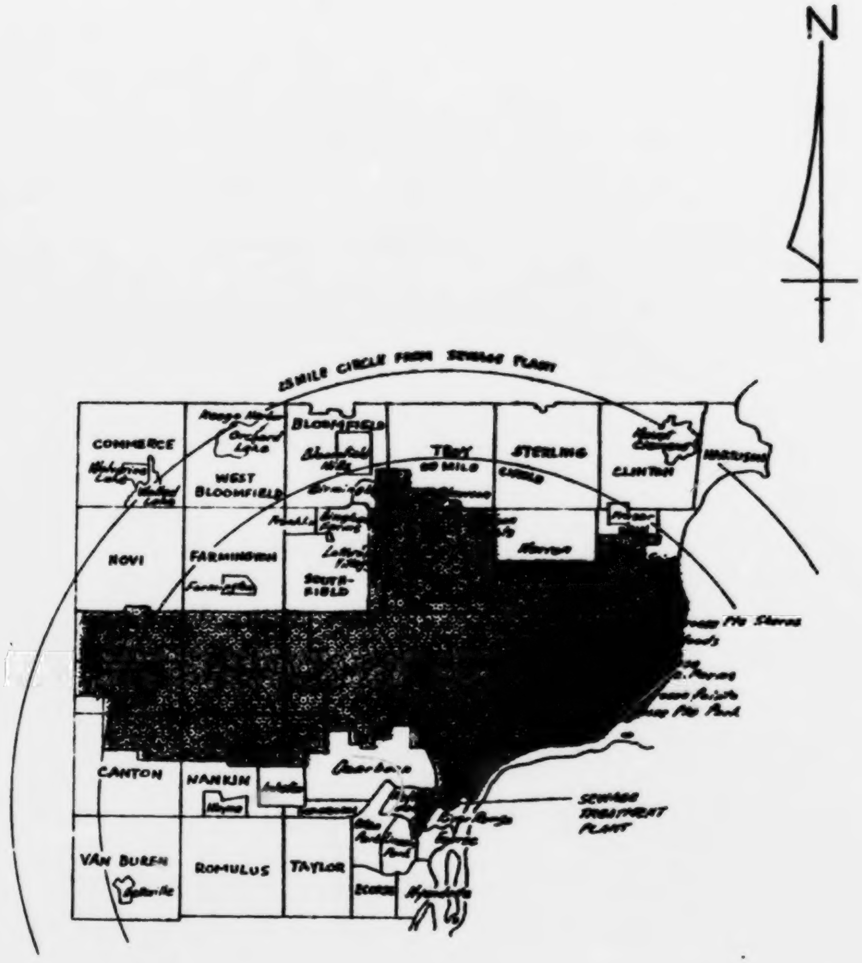
DETROIT SEWAGE TREATMENT PLANT

1980 POPULATION 4,084,000

Revised 8-26-63 1956

Revised 4 17 57

EXHIBIT 1


N
25 MILE CIRCLE FROM SEWAGE PLANT
COMMERCE
Orchard Lake
BLOOMFIELD
Bloomfield Hills
WEST BLOOMFIELD
Birmingham
TROY
20 MILE CIRCLE
STERLING
CLINTON
HARRISON
NOVI
FARMINGTON
Farmington
Franklin
Bingham Farms
Lathrup Village
SOUTH-FIELD
Warren
CANTON
NANKIN
Wayne
Inkster
Dearborn
Grosse Pte Shores
Grosse Pointe
Grosse Pte Park
SEWAGE TREATMENT PLANT
VAN BUREN
Belleville
ROMULUS
TAYLOR
ECORSE
Wyandotte

PRESENT SERVICE AREA
DETROIT SEWAGE TREATMENT PLANT
1957 POPULATION 2,605,000

EXHIBIT 2

CITY OF DETROIT DEPARTMENT OF WATER SUPPLY *DIVISION OF ENGINEERING*

SEWAGE TREATMENT PLANT - ENLARGEMENT PROGRAM
POPULATION SERVED
PAST, PRESENT AND ESTIMATED FUTURE

SHEET NO. 1 OF 5

COMPUTED BY V. ANDERSON *DRAWN BY* M.S.Y. *DATE* JUNE 7, 1957

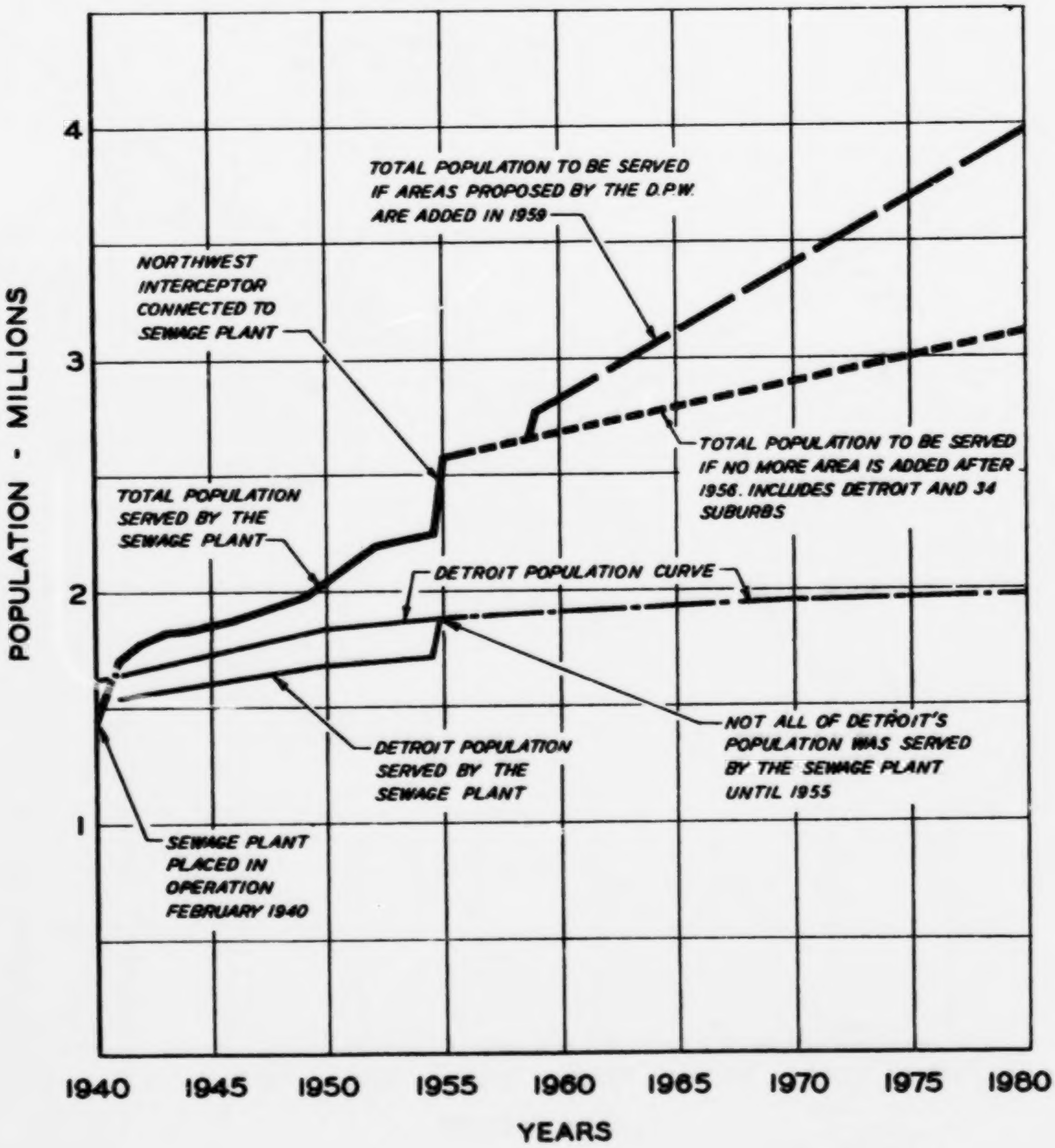


EXHIBIT 3A

CITY OF DETROIT DEPARTMENT OF WATER SUPPLY *DIVISION OF ENGINEERING*

SEWAGE TREATMENT PLANT - ENLARGEMENT PROGRAM
SEWAGE PUMPAGE
PAST, PRESENT AND ESTIMATED FUTURE

SHEET NO. 2 OF 5

COMPUTED BY V. ANDERSON *DRAWN BY* M.S.Y. *DATE* JUNE 7,1957

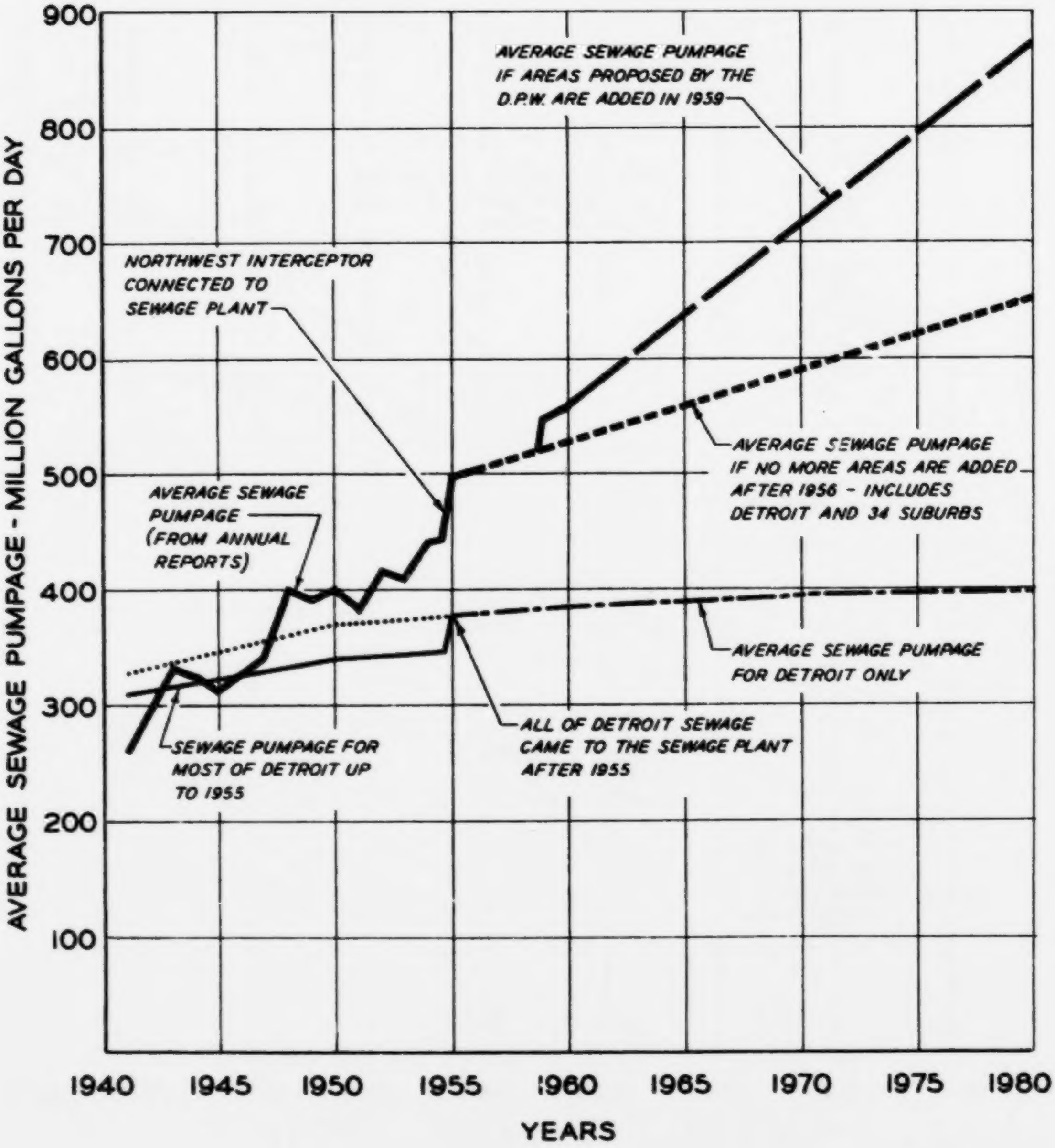


EXHIBIT 3B

CITY OF DETROIT DEPARTMENT OF WATER SUPPLY *DIVISION OF ENGINEERING*

SEWAGE TREATMENT PLANT - ENLARGEMENT PROGRAM
SUSPENDED SOLIDS REMOVED IN SEDIMENTATION TANKS
PAST, PRESENT AND ESTIMATED FUTURE

SHEET NO. 3 OF 5

COMPUTED BY V. ANDERSON *DRAWN BY* M.S.Y. *DATE* JUNE 10,1957

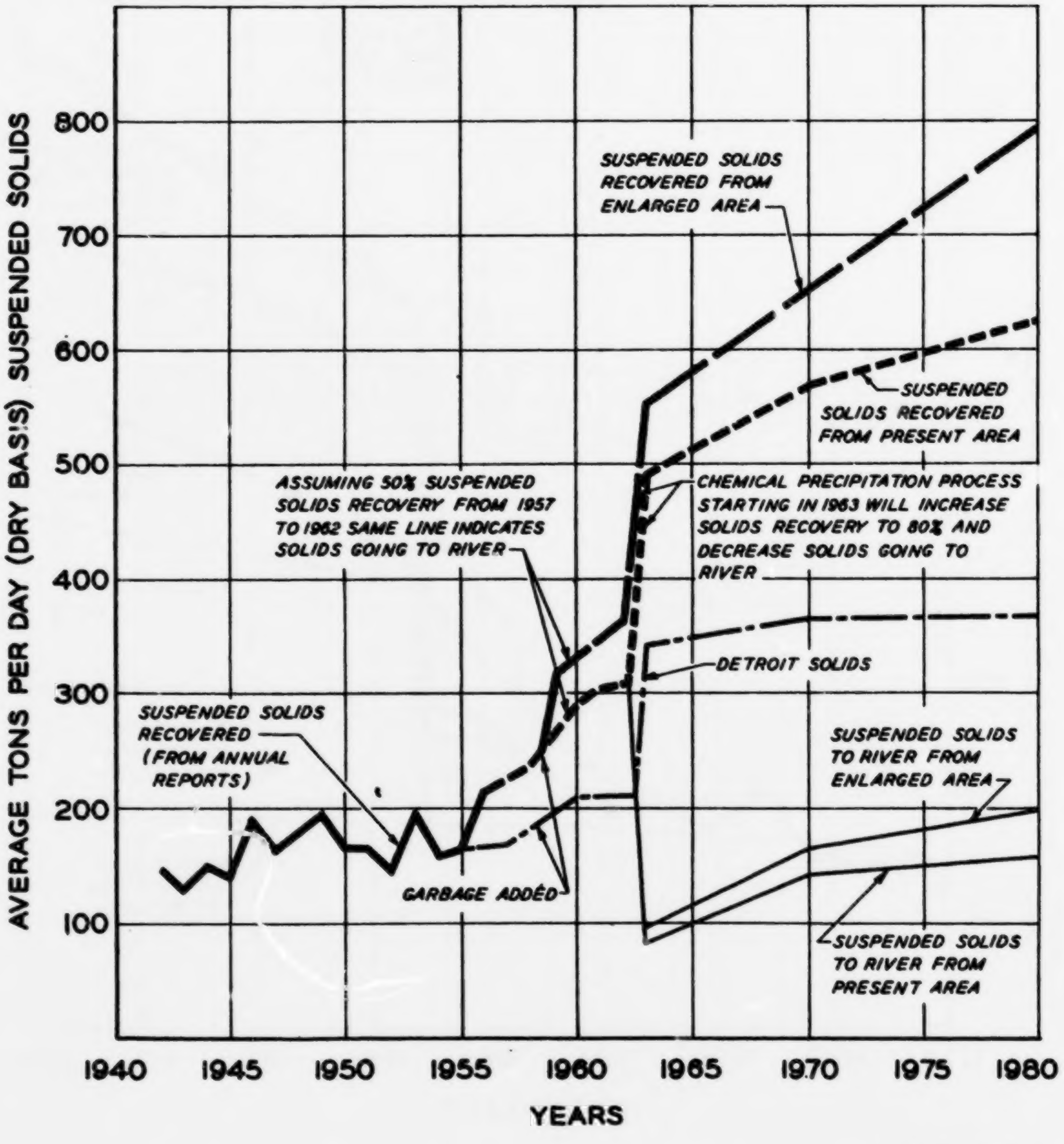


EXHIBIT 3C

CITY OF DETROIT DEPARTMENT OF WATER SUPPLY *DIVISION OF ENGINEERING*

SEWAGE TREATMENT PLANT - ENLARGEMENT PROGRAM
SOLIDS INCINERATED
PAST, PRESENT AND ESTIMATED FUTURE

SHEET NO. 4 OF 5

COMPUTED BY V. ANDERSON *DRAWN BY* M.S.Y. *DATE* JUNE 7, 1957

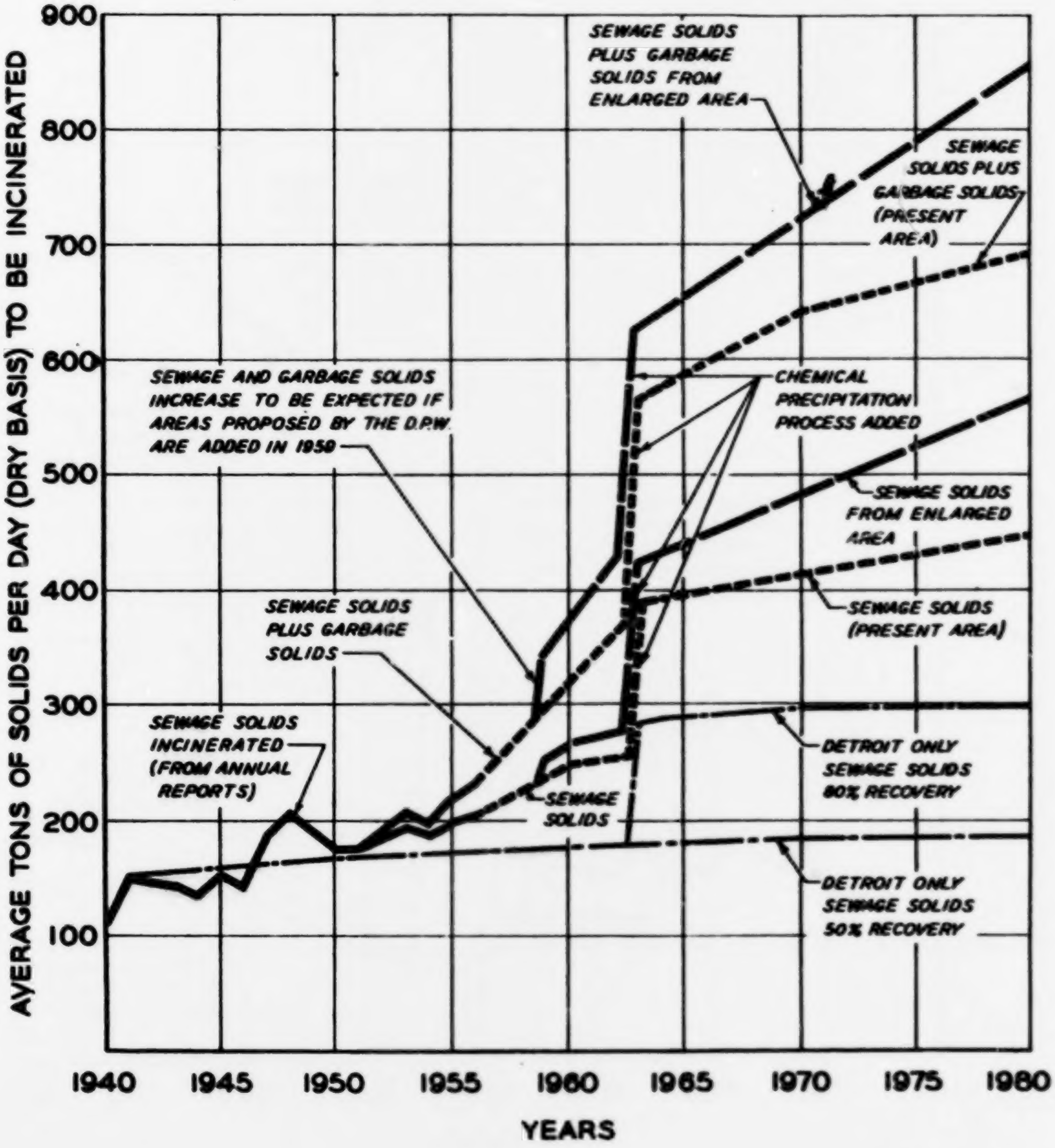


EXHIBIT 3D

CITY OF DETROIT **DEPARTMENT OF WATER SUPPLY** **DIVISION OF ENGINEERING**

SEWAGE TREATMENT PLANT - ENLARGEMENT PROGRAM
TOTAL SOLIDS - ENTERING & LEAVING SEDIMENTATION TANKS
PAST, PRESENT AND ESTIMATED FUTURE

SHEET NO 5 OF 5

COMPUTED BY V. ANDERSON DRAWN BY M.S.Y. DATE JUNE 7, 1957

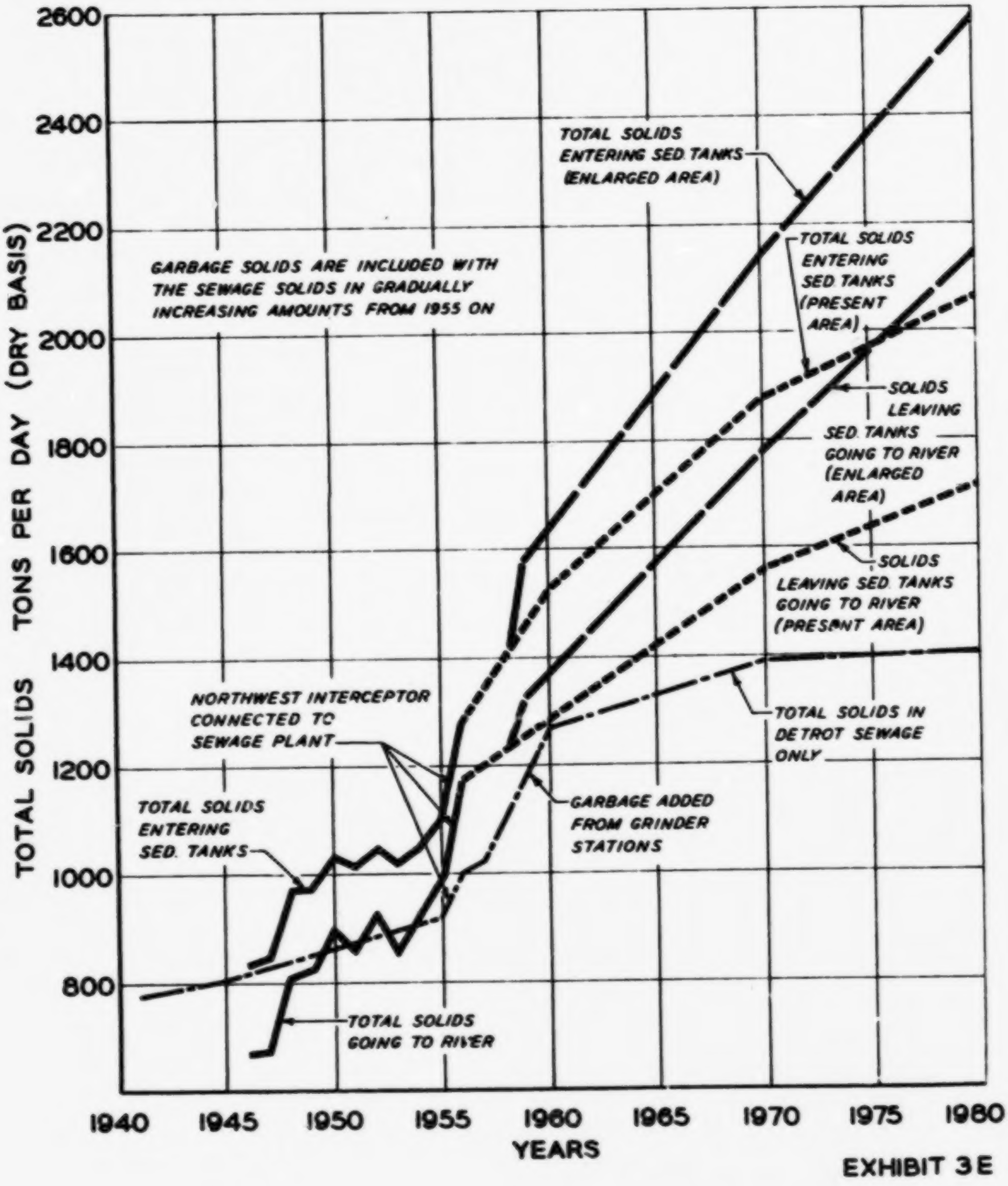
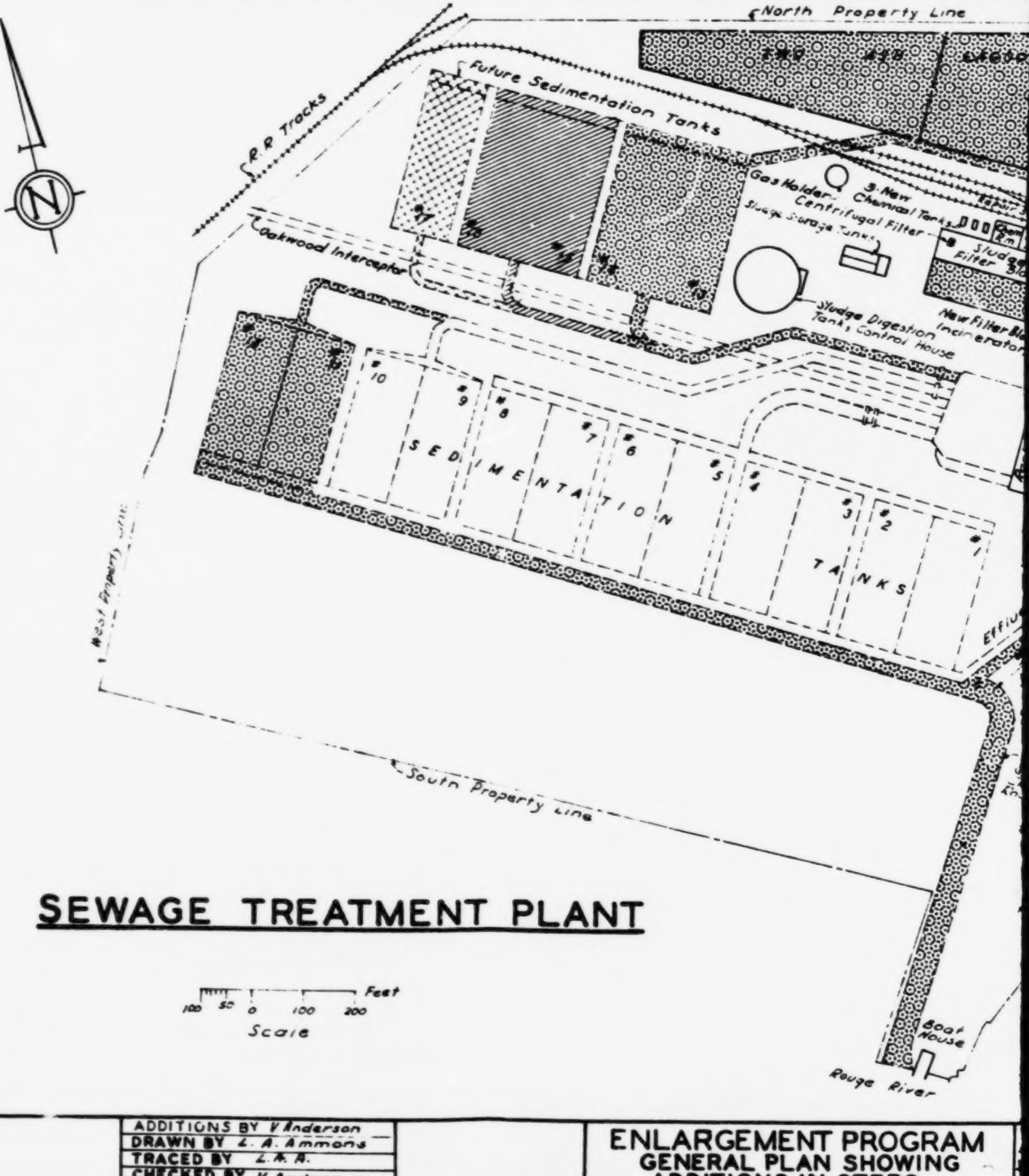


EXHIBIT 3E

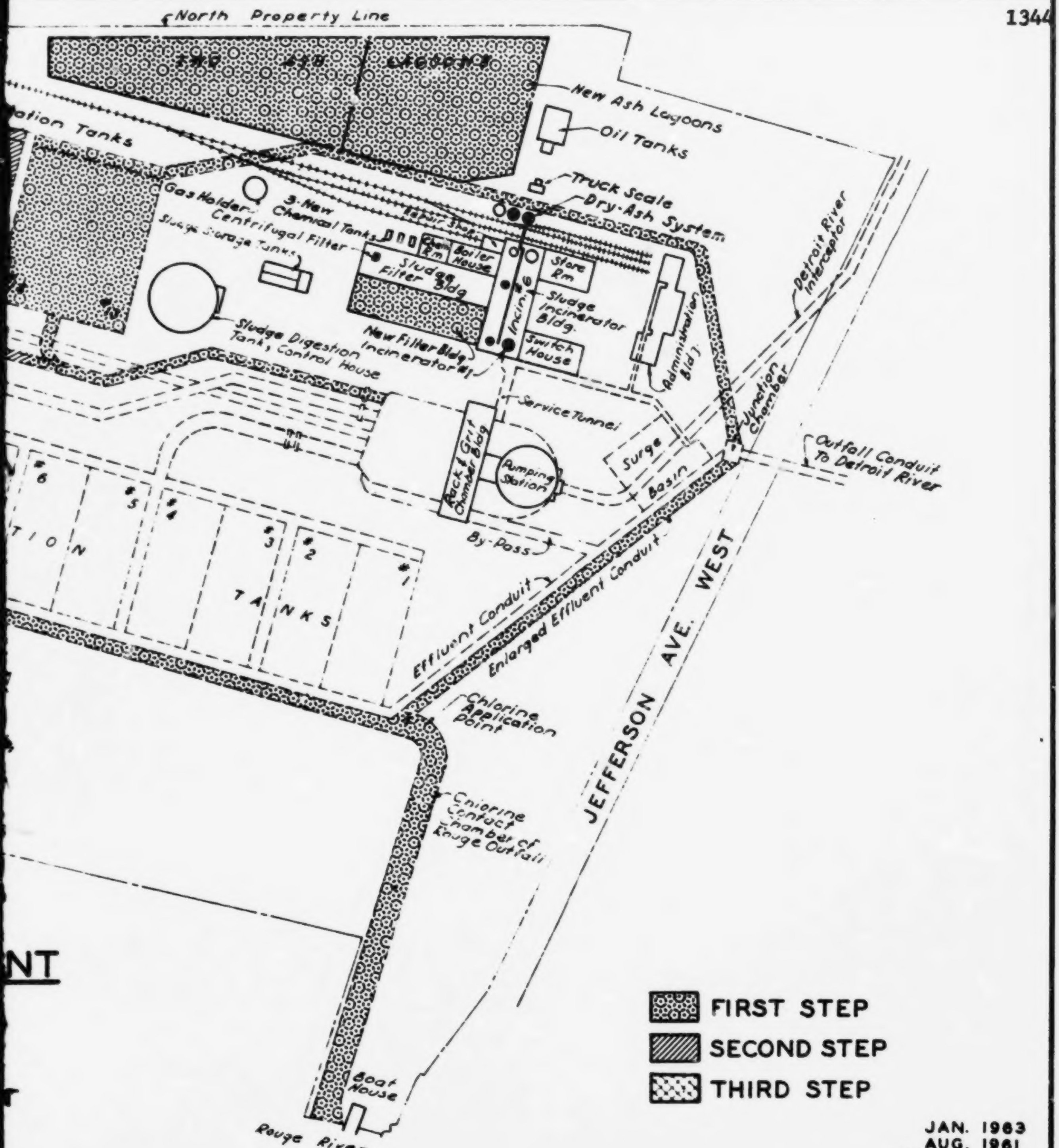


North Property Line
Future Sedimentation Tanks
R.R. Tracks
Oakwood Interceptor
Gas Holder
3 New Chemical Tanks
Centrifugal Filter
Sludge Storage Tanks
Sludge Digestion Tanks, Control House
New Filter Bl
Incinerator
Sludge Filter
#17
#16
#15
#14
#13
#12
#11
#10
#9
#8
#7
#6
#5
#4
#3
#2
#1
SEDIMENTATION TANKS
West Property Line
South Property Line
Boat House
Rouge River
Effl
100 50 0 100 200 Feet
Scale

SEWAGE TREATMENT PLANT

ADDITIONS BY	V. Anderson
DRAWN BY	L. A. Ammons
TRACED BY	L. A. A.
CHECKED BY	V. Anderson

ENLARGEMENT PROGRAM
GENERAL PLAN SHOWING
ADDITIONS IN STEPS


North Property Line
FLY ASH LAGOONS
New Ash Lagoons
Oil Tanks
ation Tanks
Truck Scale
Dry-Ash System
Gas Holder
3-New Chemical Tanks
Centrifugal Filter
Sludge Storage Tanks
Repair Shop
Chem Rm
Boiler House
Sludge Filter Bldg
Incin. 6
Store Rm
Sludge Incinerator Bldg.
Switch House
New Filter Bldg
Incinerator #1
Sludge Digestion Tank, Control House
Administration Bldg.
Detroit River Interceptor
Junction Chamber
Service Tunnel
Rack & Grit Chamber Bldg
Pumping Station
Surge Basin
Outfall Conduit To Detroit River
By-Pass
#6
#5
#4
#3
#2
#1
TION
TANKS
Effluent Conduit
Enlarged Effluent Conduit
JEFFERSON AVE. WEST
Chlorine Application Point
Chlorine Contact Chamber of Rouge Outfall
Boat House
Rouge River
NT
FIRST STEP
SECOND STEP
THIRD STEP

JAN. 1963
AUG. 1961
REV. JUL. 1957

ENLARGEMENT PROGRAM GENERAL PLAN SHOWING ADDITIONS IN STEPS	CITY OF DETROIT DEPARTMENT OF WATER SUPPLY DIVISION OF ENGINEERING	B-1000

EXHIBIT 4

EXHIBIT A-1

NATIONAL SANITATION FOUNDATION'S
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

SUMMARY:

While specific problems are discussed in the text, it is the judgment of the Board of Consultants that the present degree of treatment, namely primary, for municipal waste discharges into the St. Clair - Detroit Rivers complex, will remain sufficient for some time to come. This does not preclude the possibility of additional treatment sometime in the future, contingent upon

a. continued study and evaluation of river conditions, treatment methods and water quality objectives, to determine what, if any, improved treatment is required;

b. determination that, if such improved means of treatment are indicated, they are definitely in the public interest.

In summary, the Board suggests the following conclusions and recommendations:

1. The treatment of sewage will require, during the next 55 years, the installation of facilities

at the site of the Detroit Sewage Treatment Plant costing at least $34 million. Of this amount, $12 million must be provided prior to 1975 to provide for expansion of the existing primary facilities to the design capacity of the present plant which was based on 4,000,000 people. Ultimate requirements for primary treatment will require an additional $25 million for a total of $59 million. If secondary treatment should be indicated, an additional $129 million would be required during the next 55 years with an additional $41 million for ultimate requirements or a total of $170 million additional. This $170 million is based on complete secondary treatment in terms of present knowledge. In all probability, lesser sums would be required for a future determined improved treatment.

2. Present evidence indicates that:

a. the St. Clair River can assimilate primary treated chlorinated wastes from the St. Clair area;

b. the Detroit River can assimilate primary treated chlorinated wastes discharged into it near Zug Island, and at Wyandotte and other presently used locations;

c. the degree of treatment for a future proposed Lake Erie - Huron River plant need not be determined until some time in the future;

d. it has not been established on the basis of information presently available to the Board that secondary treatment is indicated at this time for any plants discharging into the St. Clair or Detroit Rivers. This does not preclude the possibility of additional treatment sometime in the future. The need for and time table of any additional treatment should be determined after the studies already in progress and those recommended by the Board have been completed.

3. The metropolitan area here considered now has in the Supervisors Inter-County Committee an overlying policy making council, and in the Detroit Department of Water Supply a regional water utility agency, already serving 50 areas,outside of the City of Detroit, with sewerage, drainage and disposal facilities.

4. The Board recommends that the responsibilities of the Detroit Board of Water Commissioners be geographically expanded to cover the sewage disposal facilities (other than those of strictly local service) of the metropolitan area.

5. The financing of the program delineated should proceed under the general auspices of the agency proposed in Item 4. The present practice of the use of the revenue bond as a source of money and user charges as the sources of repayment should be continued, because of

its demonstrated maturity of application and attested integrity in the financial market.

CONCLUSIONS AND RECOMMENDATIONS:

1. The Six-County metropolitan area of Southeastern Michigan encompasses some 3,951 square miles. As a service area it is governed by 221 autonomous governmental units.

2. The population will reach 5.8 million in 1980 and 8.5 million in the period 2000 to 2020.

3. Because of the topography of the whole area most of it drains into the St. Clair - Detroit River complex. A smaller portion drains into the Huron and other river systems.

4. The Detroit Sewage Treatment Plant receives some 80% of the present sewage flow in the metropolitan area.

5. The comprehensive sewerage plan proposed will entail the construction of some 184 millions of dollars of main interceptors over the next 40 years.

6. The program for sewage collection leaves the responsibility for the provision of laterals and subcollectors entirely in the hands of local political units, where it now resides.

7. The metropolitan area here considered now

has in the Supervisors Inter-County Committee an overlying policy making council, and in the Detroit Department of Water Supply a regional water utility agency, already serving 50 areas outside of the City of Detroit, with sewerage and drainage facilities.

8. The Board recommends that the responsibilities of the Detroit Board of Water Commissioners be geographically expanded to cover the sewerage and drainage facilities (other than those of strictly local service) of the metropolitan area.

9. The financing of the program delineated should proceed under the general auspices of the agency proposed in Item 8. The present practice of the use of the revenue bond as a source of money and user charges as the sources of repayment should be continued, because of its demonstrated maturity of application and attested integrity in the financial market.

G. Remus

EXHIBIT "B"

TRUE COPY CERTIFICATE

STATE OF MICHIGAN,)
) ss.
City of Detroit)

CITY CLERK'S OFFICE, DETROIT

I, THOMAS D. LEADBETTER, City Clerk of the City of Detroit, in said State, do hereby certify that the annexed paper is a TRUE COPY OF RESOLUTION adopted (passed) by the Common Council at session of

September 3, 1963

and approved by Mayor

September 9, 1963

as appears from the Journal of said Common Council in the office of the City Clerk of Detroit, aforesaid; that I have compared the same with the original, and the same is a correct transcript therefrom, and of the whole of such original.

In Witness Whereof, I have hereunto
set my hand and affixed the
corporate seal of said City, at
Detroit, this 25th
day of August A.D. 1964

G. Remus

THOMAS D. LEADBETTER

City Clerk

By Councilman Ravitz:

Resolved, That the Detroit Sewage Disposal System Enlargement and Improvement Program of July 22, 1957 be amended to include the attached amendments (henceforth to be known as the amendment of August, 1963) and the same is hereby approved; and further

Resolved, That the Board of Water Commissioners be and it is hereby authorized to enter into the necessary agreements with municipalities in the proposed service area with the understanding all such agreements shall be submitted to the Common Council for approval; and further

Resolved, That the Board of Water Commissioners be and it is hereby authorized to finance, construct, operate and maintain a Sanitary Sewage Interceptor along Dequindre Road from Fourteen Mile Road to the Clinton River Valley as soon as executed agreements with a sufficient number of communities in the service area have been obtained to assure the economic feasibility of the project.

Adopted as follows:

Yeas-Councilmen Beck, Brickley, Connor, Patrick, Ravitz, Rogell, Van Antwerp, Wierzbicki and President Carey-9.

Nays-None.

EXHIBIT "C"

DEPARTMENT OF PUBLIC WORKS
COUNTY OF OAKLAND, MICHIGAN
550 SOUTH TELEGRAPH ROAD
PONTIAC, MICHIGAN 48053
PHONE FEDERAL 8-4585

October 20, 1964

Detroit Board of Water Commissioners
735 Randolph
Detroit 26, Michigan
Attn: Mr. A. C. Michael

Re: Extension of Dequindre Interceptor, north of 14 Mile Road.

Gentlemen:

This letter is intended to inform you of the plans and progress schedule of this department in providing sanitary sewers for the Clinton River area of Oakland County.

Between March 11, 1964 and May 12,1964, we received requests from the Townships of Avon, Pontiac, Waterford and Independence and from the Village of Orchard Lake to "acquire" a sewage disposal system for the Clinton River area of Oakland County. These requests were received by the Board of Public Works and the Board of Supervisors by resolutions #64-6-103 and Misc. resolution #4342, respectively. The system was established as a County system, and plans, specifications and an estimate of cost are being prepared.

We are planning to construct an interceptor sewer along the Clinton River as shown on the attached sketch, which will outlet into the Dequindre Interceptor at the easterly county line. The extension of the Dequindre Interceptor from 14 Mile Road, northerly to the Clinton River will be done by the Detroit Water Board.

Our construction plans will be completed by approximately February 1, 1965, and we expect to have construction started by the Spring of 1966. Our preliminary plans indicate a construction cost of $10,220,000 to serve a population of 142,500.

Very truly yours,

DONALD W. RINGLER

Deputy Director

DWR/ha

EXHIBIT "D"

HARRISON TOWNSHIP MACOMB COUNTY, MICHIGAN

June 10, 1965

Mr. Gerald Remus,
Superintendent,
Detroit Water Board,
Detroit, Michigan.

Dear Sir:

Enclosed are copies of the Central Macomb Sanitary Sewer Study Committee report and Minutes of the meeting of the proposed Central Macomb Public Works Authority on May 26, 1965.

You will note the report of the Technical Committee contains many suggested routes of sewerage conveyance. Also that the last paragraph of the Minutes of the Meeting of May 26, 1965 requests that I present the report of the Technical Committee to you for your findings and report.

It was suggested that your report and findings be presented at a meeting of the group in Mt. Clemens, to be scheduled at your convenience.

We hope that the report contains the information necessary to aid you and your staff in arriving at reasonable rate projections, however, the services of the Technical Committee; Macomb County Planning Commission; and the Macomb County Health Department are all at your disposal at your request.

I am sure we are all hoping for an early report.

Very truly yours,
RALPH E. BEAUFAIT,
Supervisor,
Harrison Township.

REB:KFC.

MEMBER OF THE MICHIGAN TOWNSHIPS ASSOCIATION
38151 L'Anse Creuse Road - Mt. Clemens, Mich. - Phone
Phone Howard 3-5837--3-5838

The meeting was called to order at 10:10 A.M. by Bill G. Rowden who was requested to conduct the meeting in the absence of Mr. Ralph Beaufait, Chairman.

The Acting Chairman briefly reviewed the discussions of the Technical Committee consisting of local community engineers and representatives of the County Health Department and the County Planning Commission held on May 17,1965, pursuant to the requests of the group at their meeting of May 12,1965, held in the offices of the Detroit Water Board.

Rowden indicated that the purpose of the meeting was to review the findings of the Technical Committee concerning the recommendations for conditions under which the Detroit Water Board would be requested to furnish rates for transportation and treatment of sewage to the communities in the central Macomb area.

In response to the Chairman's request, Mr. De Decker explained in detail the Technical Committee's recommendations. In general, these included a review of the tables and maps prepared and previously distributed to each of the communities involved prior to the meeting. The tables listed seven major conditions concerning points of discharge in the district involved and the population and potential customer estimates for the years 1970, 1980 and 2000.

Bridges and Damon indicated that they had recently met with Mr. Morey Richmond of the Michigan State Health Department and recommended that Mr. Richmond be invited to subsequent Committee meetings.

G. Remus

On inquiry concerning the population estimates for Selfridge Air Force Base, Mr. Thomson indicated the probability that the population would decrease from the present 7,000 in the foreseeable future due to the general switch to a reserved type of population period.

Through the continued discussion, it was pointed out that the recent federal study on the pollution of the lower Detroit River and Lake Erie further illustrated the importance for the eventual integration of the future community and regional system of sewage collection and disposal.

With regard to financing, it was felt that general bonding capacity would be imposed through a joint community effort and that a more favorable bonding capacity would result if the Detroit system could build the major trunk lines to service the areas. The discussion of probable financing would be further explored at a later meeting when additional rate structure information is obtained from the Detroit Water Board.

The need for making maximum use of the existing local sewage treatment plant capacities was again emphasized as an important feature of combining community efforts prior to the time that a trunk interceptor line could be constructed to the regional system.

It was concluded that immediate steps should be taken to obtain from each community: (1) Inventory of present treatment plant capacity; and (2) The outstanding indebtedness remaining on the existing sewage treatment plants.

Rowden indicated that the current studies of the County Planning Commission involve n inventory of the facility systems throughout the County and urged the cooperation of the communities to provide assistance in collecting this information which would eventually be assimilated into a report on the existing facility systems in Macomb County. The original data will be retained as a data bank in the County Planning Commission's office for immediate and future use by groups such as this Committee.

It was indicated that the information to be collected by the Macomb County Planning Commission would be of vital use to the communities involved in exploration, and their cooperation would be forthcoming when requested by the County Planning Commission.

It was concluded that Mr. Ralph Beaufait, Chairman of the Committee, would submit under cover letter on behalf of the Committee the table of requested transportation and treatment charges as prepared by the

Technical Committee to Mr. Gerald Remus, Superintendent of the Detroit Water Board. He would further request that Mr. Remus present his findings at a meeting to be called in Mount Clemens. In addition, the Technical Committee, Mr. Charles Beaubien, member of the Detroit Water Board from Macomb County, and Mr. Morey Richmond, Michigan State Health Department, will be invited to attend this meeting.

Mr. Rowden was requested to prepare minutes of this meeting.

Meeting adjourned at 12:06 P.M.

Respectfully submitted,
BILL G. ROWDEN, Director
Macomb County Planning Commission

BGR:cmp

EXHIBIT "E"

Office of
WAYNE COUNTY DRAIN COMMISSIONER
3523 CADILLAC TOWER
DETROIT 26, MICHIGAN
Tel. 963-9540

April 2, 1965

To The Honorable
Board of Supervisors
County of Wayne
1320 City County Bldg.
Detroit, Michigan 48226

Gentlemen:

I have read with interest the "Report on Metropolitan Environmental Study, Sewerage and Drainage problems and Administrative Affairs," prepared by the National Sanitation Foundation for the Supervisors Inter-County Committee.

It seems to me that the title of this study is misleading inasmuch as the subject of drainage is discussed only in relation to a definition of the existing drainage basins or as an outlet for combined sewer overflows. I find no specific proposals for long range planning of surface water runoff.

While there is an inherent relationship between the amount of potable water used and the amount of sewerage, no such relationship exists in storm water drainage. I question that storm water drainage, projects can be financed on a revenue basis as the report appears to recommend in paragraph 9 of the "Conclusions and recommendations."

I am in whole hearted agreement with the recommendations that the responsibilities of the Board of Water Commissioners of the City of Detroit be expanded to cover the sewerage facilities of the Metropolitan area and that the financing of this program be similar to that used in the present expansion of the regional water system.

Very truly yours,
HENRY V. HERRICK
Wayne County Drain Commissioner

SBP/rs

EXHIBIT "F"

BOARD OF PUBLIC WORKS
COUNTY OF WAYNE
1230 First National Building
Detroit, Michigan 48226
962-7670

May 12, 1965

To the Honorable
Sewage Disposal & Water Supply Committee
Board of Supervisors, County of Wayne
1320 City-County Building
Detroit, Michigan (48226)
Att: Bernard E. Hanus
Ass't. Committee Clerk

Re: S.E. Mich. Sewerage &
Drainage Study Nat'l.
Sanitation Foundation -
SICC REF: Our ltr.
dated 4/21/65

Gentlemen:

The Board of Public Works, at its regular meeting of April 13, 1965, received "A Report on Sewage Disposal Problems" and "A Report on Metropolitan Environmental Study - - - Sewerage and Drainage Problems - Administrative Affairs", as prepared for the Supervisors Inter-County Committee by the National Sanitation Foundation, with your request for a written evaluation thereof.

Preparatory to compliance with your request, these reports were analysed by our staff and the resulting "REVIEW OF NSF SIX-COUNTY SEWERAGE, SEWAGE DISPOSAL AND DRAINAGE REPORT" offered for board consideration.

In accordance with formal action taken at a regular meeting of the Board of Public Works on May 11, 1965, we now respectfully submit this "REVIEW OF NSF SIX-COUNTY SEWERAGE, SEWAGE DISPOSAL AND DRAINAGE REPORT" in response to your request for a written evaluation of the aforementioned National Sanitation Foundation Reports.

Sincerely
BOARD OF PUBLIC WORKS
By WAYNE G. RICE
Deputy Secretary

WGR:ccs

encl:

Ten (10) copies of "REVIEW. . ."

G. Remus

REVIEW OF NSF SIX-COUNTY SEWERAGE, SEWAGE DISPOSAL AND DRAINAGE REPORT

The report, in two volumes, covers sewage disposal problems in one volume and, aided by a U.S. Public Health Service Grant, covers sewerage and drainage and administrative matters in the second volume.

The report on sewage disposal problems becomes a defense of combined sewer systems and primary treatment of sewage, based principally on the thesis that to reduce or eliminate the overflow of storm water-sanitary sewage mixtures to the Detroit River, to chlorinate or otherwise treat such overflows, or to go to a more advanced degree of treatment of sewage cannot be "economically justified."

The report on sewerage and drainage matters contains an analysis of population growth of the six-county area and a projection of population growth to the year 2020 and to the ultimate development of the area. A system of interceptors to bring sewage to the present major plants and to a future plant near the mouth of the Huron River is set forth. This plan,for at least a part of the area, has been Wayne County's master plan since

1958. Estimates of cost at 1964 prices and a schedule for completion of various parts of the program are set forth. The report supports the combined sewer system of Detroit, but the recommended interceptor program is for a separate system. Administrative recommendations indicate the desirability of a "central agency" to own and operate the large plant and interceptor facilities. The report then points to the Detroit Water Board as the agency to do this job, and recommends financing of interceptors and plant expansion on a revenue bond basis, implying that the revenues of all presently connected users of the Detroit system would be used as a "base" for the revenue bond financing of the facilities.

CONCLUSIONS AND RECOMMENDATIONS

No action should be taken to either approve or disapprove the section of the report on Sewage Disposal Problems, until after the U.S. Public Health Service Detroit River-Lake Erie report has been published and has been received and evaluated.

The sanitary sewage interceptor plan and program should be approved in principle and the resulting "Master Plan" adopted. This creates a regional plan, without the necessity of submitting the area to the control of a "central agency." The counties of Wayne and Oakland have rejected the "revenue bond" basis for the construction of interceptor facilities in favor of the "limited obligation contract bond" method. It is recommended that this method be reaffirmed.

The proposal to enlarge the Detroit Sewage Treatment Plant to provide adequate and proper sewage disposal service to an expanded service area, has merit, and subject to certain controls, should be accepted. The charges for sewage disposal service should be uniform throughout the area, and should be subject to MPUC regulations.

Existing agreements for financing and constructing facilities as well as service agreements should remain in effect and future construction of inter-county facilities should be constructed by inter-county agreement. Facilities within a county which serve only the county and its municipalities should be financed and constructed by that county.

EXHIBIT "G"

BOARD OF
COUNTY ROAD COMMISSIONERS
WAYNE COUNTY
7th FLOOR CITY-COUNTY BLDG.
DETROIT, MICHIGAN 48226
962-7670

May 6, 1965

To the Honorable
Sewage Disposal and Water Supply Committee
Board of Supervisors
1320 City-County Building
Detroit, Michigan 48226

Ladies and Gentlemen:

Your Honorable Committee has previously referred to this Board, with a request for review and comment, a two volume report prepared for the Supervisors Inter-County Committee by the National Sanitation Foundation. The subject of the report being Sewerage and Sewage Disposal Problems of the regional area. Our review and comment and recommendations are transmitted herewith.

Respectfully,

BOARD OF WAYNE COUNTY ROAD COMMISSIONERS

A. BARBOUR
CHAIRMAN

VICE-CHAIRMAN

WILLIAM E. KREGER
COMMISSIONER

G. Remus

REVIEW OF SIX-COUNTY STUDY
OF
SEWERAGE AND SEWAGE DISPOSAL PROBLEMS

The report is divided into three parts -- in two volumes: The Sewerage Study, The Disposal Study, and The Study of Administrative Affairs. The findings and conclusions constitute a plea that the development of a regional sewage disposal system become the responsibility of the Detroit Water Board and that the City be allowed to continue with its present level of sewage treatment and continue to discharge untreated mixtures of sewage and storm water to the Detroit River and Lake Erie because to do otherwise "cannot be economically justified."

I. Six-County Sewerage and Drainage Study:

The term "drainage" in the title is somewhat misleading in that the report makes only a superficial review of the existing natural drainage as it relates to the sanitary portion of a separate sewer system, no study being given to the storm-water problems of the areas to be served by separate sewer systems. The administrative recommendations of the report relative to operation of facilities by Detroit probably could not be extended to cover facilities to solve these problems.

The population projections appear to follow the projected lows of the spread in population predictions for Michigan and the United States, and might thus be conservatively low when, for purposes of design of facilities it would appear that they should be conservatively high. It does not appear proper to omit or deduct industrial areas from the total area from which design population is derived, inasmuch as no allowance is then made in the final projection for industrial equivalent population.

The tabulation of interceptor systems, by listing combined sewer capacity together with separate, suggests that there is capacity in Detroit's combined sewer capacity to carry the sanitary flow from the separate systems to the sanitary interceptors. The difficulty is that, during times of storm as combined sewers carrying sanitary flow, they discharge an "enriched" sanitary sewage-storm water mixture to the rivers which they parallel.

In the comparison of separate sewer systems Vs. combined sewer systems,the report appears to contend that the separation of sewer systems is difficult and expensive, if not impossible, to achieve; and that a combined sewer system is more desirable. One can imagine the reaction of the U.S. Public Health Service to these findings -- a report supported by U.S. Public Health Service funds, which praises the combined sewer system with its attendant overflows to the Detroit River and its built-in exposure to the hazard of flooded basements. The discussion concerning a control of combined sewer overflows concludes that combined sewer systems discharging into Lake St. Clair are justified in providing storage for a one-year storm, but that a study should be made to determine whether such facilities can be economically justified on larger combined sewer outlets, and that chlorination of storm overflow may have merit in the case of Farmington, but chlorinating combined storm sewage overflows cannot be economically justified.

The section on interceptor system presents a detailed program of coordinated separate sewerage systems to serve the entire six-county area. The program is clearly feasible and a logical schedule for the orderly completion of the entire system is set forth. Assignment of the responsibility for the development of this system to the Detroit Water Board would mean that this responsibility and the accompanying authority would be vested in an organization whose primary loyalty is to an area amounting to 3.5% of the six-county area and whose present population is something less than half of the six-county population and will be 29% of 1980 population, 25% of 2000 population, 21% of 2020 population and less than 9% of built-up population -- and whose own combined sewer system may soon require a multi-billion dollar renovation in order to eliminate or greatly reduce the overflows of the storm water-sewage mixture to the Detroit and Rouge Rivers.

II. Six-County Sewage Disposal Problems

Perhaps the first governmental recognition of the problem of pollution of the Detroit River and other international waters was the Boundary Waters Treaty between the United States and Canada in 1909, in which each country agreed that boundary waters and waters flowing across the boundary would not be polluted on either side to the injury of health and property on the other. It was not until 1938-1939 that the first really significant steps toward pollution control were made, when the Detroit Sewage Treatment Plant and the Wayne County Plants at Wyandotte and Trenton and their sanitary interceptors were placed in operation -- construction having been aided by 45% Public Works Administration grants. One can imagine the plans for projects which were proposed in the intervening thirty years and the rejection of those plans on the basis that the then present methods were adequate and that the proposed projects cost too much money and could not be "economically justified".

The report sets forth in some detail data showing the volume and uniformity of flow of the Detroit River, which is elsewhere sometimes recognized as being a part of the greatest fresh water resource in the world. The river is not really a river but a channel connecting two lakes and, in fact, derives its name from the French "D'Etroit" for "the strait". The report limits its investigations to the Detroit River and the effects of chlorinated primary sewage treatment plant effluent, but asks without supplying an answer whether Lake Erie is able to assimilate this waste discharged into it at the outlet of the Detroit River.

The mean annual flow of the Detroit River is compared to the average daily flow of the Detroit Sewage Treatment Plant to develop a "dilution ratio" for the plant effluent. The dilution ratios derived are inconclusive because this factor becomes critical at seasonal times of the year when less than average river flow must receive higher than average plant flow. The

50% dilution ratio is meaningless because of the physical impossibility of distributing the effluent across half of the flow on the river. The investigation of dilution factor is limited to sewage treatment plant effluent, no account being taken of upstream combined sewer diversions or pumping station by-passes. The 23% Trenton channel flow is based on 177,100 cfs flow and is probably somewhat less at lower river flows.

The study of "dilution ratio" leads to a discussion of dissolved oxygen in the stream and the satisfaction of Biochemical Oxygen Demand (B.O.D.) by that dissolved oxygen, and then exaggerates the amount of available dissolved oxygen, by computing the total amount in the river in February and July.

The discussion of solids in treatment plant effluent opens with a dramatic statement that 92% of settleable solids are removed at the Detroit Plant. In modern sewage works practice, this test is generally recognized as being inconclusive and is not relied upon as an index of plant efficiency. It should not be expected that suspended solids in the sewage which fail to be deposited in the settling tanks of the plant where the flow velocity is in the range of several feet per minute would be deposited in the river where the flow velocity is several feet per second. Rather, it should be expected that deposition of sewage solids would occur in boat wells and coves along the river-front and in Lake Erie where velocities are much lower.

The effect of application of chlorine is illustrated by comparing chlorine applied with per cent of demand satisfied. The Michigan Department of Health specifies application of chlorine in sufficient quantities to produce a residual of chlorine in the effluent. To chlorinate to a percentage of chlorine demand requires much less chlorine and is much more economical.

The report repeats some of the defenses of combined sewer systems contained in the separate volume on Sewerage and Drainage Problems, and states that in the Six-County Area,combined sewers will discharge mixtures of sewage and storm water 89 to 90 times a year for about 2% of the time during the year. The fact that each overflow may produce an effect which lasts for several days in the slower moving parts of the stream along the shore and in Lake Erie is not taken into account in the 2% figure, which thus becomes misleadingly low; 25% to 30% is a more likely figure.

The characteristics of the sewage produced by the municipalities of the metropolitan area are described, and the requirement and goals of good treatment practice are listed. The oxygen demand of the plant effluent is then compared with the hypothetical amount of dissolved oxygen available in the Trenton Channel flow. No account is made of additional conditions of dissolved oxygen depletion by storm water overflows, industrial wastes, or other causes. The necessary adjustments in application of chlorine to plant effluent from approximately 88% of chlorine demand to approximately 130% are recommended in order that control of coliform to conform with the requirements of the Michigan Department of Health and with the standards of the International Joint Commission on Pollution of Boundary Waters may be assured.

The expansion of facilities at the Detroit Sewage Treatment Plant is projected at $12,000,000 to meet the anticipated flow from 4,000,000 people. This program has been scheduled since 1957, when a 10¢ per 1,000 cubic foot rate increase was inaugurated to support a $32,000,000 program scheduled for completion in 1975. For several years, construction of these facilities has been assisted by federal grants of 30% to 50% of cost.

The discussion of other considerations, including Eutrophication or aging of lakes because of the addition of nutrients, concludes that aging of Lake Erie is taking place but that,since responsibility for the aging process is probably traceable to several sources, the requirement for further degree of treatment of sewage cannot be justified. Cyanides, Phenols, Insecticides and Detergents can be controlled by means other than at the sewage treatment plants.

The report, in conclusion, finds that within certain limitations the Detroit River is capable of assimilating chlorinated wastes from present sewage treatment plant installations, no recognition being given to the effects of storm water or other diversions superimposed upon the plant effluents. Nor has any recognition been given to the fact that the conventional 5-day B.O.D. parameter does not reflect the effects of the total load on the waters of Lake Erie, where the ultimate B.O.D. manifests itself. The report further finds that secondary treatment of effluent discharged into the St. Clair and Detroit Rivers cannot be justified. The door is left open,however, to further evaluation of secondary treatment requirements based upon present or future studies.

III. Administrative Affairs

The discussion of administrative affairs recites some of the available methods for solving metropolitan area problems, and for a variety of reasons, rejects all of these except one. It is proposed to turn over management of the "large central facilities" to the Detroit Water Board, for the reason that revenue bond financing of interceptors and treatment plants would then be available.

The dominance of the core city in sewerage and sewage disposal matters as well as water supply should be extremely difficult for the municipalities of the region to accept, especially since it is proposed that even an expanded "Board" would be Detroit-oriented, since "Detroit representation should continue to have a majority vote". This is most contrary to the "appropriate criteria" listed in the report.

It is suggested that the Supervisors Inter-County Committee become the overlying policy-making council. It is not conceivable that the City of Detroit would shift policy responsibility for facilities, where Detroit debt is involved, to a Committee of Supervisors from other counties. The report concludes with a recommendation that the "long precedent, high sophistication,maturity of application, and attested integrity in the financial market" of revenue bonds be the basis for the financing of the needed facilities. The implication is made that the revenues from the Detroit System, as well as present suburban users would be pledged in support of such revenue bonds. This is difficult to reconcile with the proposal for Water Board management of facilities.

Wayne County and Oakland County Communities have rejected the revenue basis for financing interceptor construction and have, by contract with the respective counties, acquired interceptor capacity for their ultimate needs. Even to consider an area-wide advalorem tax is wishful thinking but, by the County-Municipalities type contract, each municipality may choose the advalorem method of raising the funds to meet its obligation, if it desires to do so. Revenue bonds may bear comparable interest rates with the contract type bond; but "coverage" and maintenance of reserve surpluses require a higher revenue rate than is necessary if the obligation is supported by the contract to make periodic interest and principal payments, and the "rate" or revenue method is preferred by the municipality.

IV. Conclusions

The report tends to support Detroit's plea for continued operation of its combined sewer system and primary treatment plant in the face of pending action at the Federal level to require that storm water diversion be limited and controlled or even eliminated, and in anticipation of a Federally-conducted survey and report expected to reveal the extent to which Lake Erie and the Detroit River have been polluted and degraded by combined sewer overflows and inadequately treated sewage. There are legal questions concerning Detroit's ability to carry out the proposals contained in the reports, particularly in view of the bonded debt of several of the facilities proposed to be made part of the Detroit system.

It is recommended that:

1. The NSF Six-County Report on Sewage Disposal Problems should not be accepted or rejected until after the U.S. Public Health Service Detroit River-Lake Erie Report is received and evaluated.

2. Wayne County should reaffirm its adoption of separate sanitary sewers as the only kind acceptable for future construction in Wayne County, and that the NSF should be requested to issue a report on storm water drainage problems.

3. The Sanitary Interceptor Program set forth in the Sewerage and Drainage Study be concurred in, and approved in principle.

4. The concept of the enlargement of the Detroit Sewage Treatment Plant to provide an adequate and proper degree of sewage treatment for the expanded service

area of that plant, financed on a revenue basis, be concurred in, but that the Water Board be required to abandon its dual Sewage Disposal and Water Supply Rate Schedule -- a low rate for Detroit customers and a higher rate for suburban users. Review and control of rates by an appropriate body should be required.

5. The existing contracts for financing, construction and operation of sewerage and sewage disposal facilities must remain in full force and effect.

6. Future requirements of facilities within any county, for that county, be the exclusive jurisdiction of that county.

7. Any facility necessary to be constructed by two or more counties be constructed and administered under the provisions of Section 17 of Act 342 PA 1939 as amended,which follows, with review of rates and changes under the Sewer and Water Committee of the S.I.C.C.

ACT 342

Sec. 17. Any 2 or more adjoining counties which have, by resolution of their respective Boards of Supervisors, authorized and directed the establishment of any of the improvements, facilities or services authorized by this Act,may contract for the joint establishment, operation or maintenance of any such improvements, facilities or services, or any portion thereof. Such contract shall provide for the establishment of an administrative agency to be composed from the membership of the respective county agencies, and such administrative agency shall have and exercise all the powers and duties conferred upon a county agency under the provisions of this act, except as the same may be specifically limited by the provisions of said contract.

Any bonds issued to finance the construction of improvements under such contract shall be the joint obligation of all participating counties.

G. Remus

EXHIBIT "H"

Excerpt from statement made at the National Legislative Conference of National League of Cities, Washington, D. C., March 30 - April 1, 1965, by Mr. James M. Quigley, Assistant Secretary of the United States Department of Health, Education, and Welfare.

- - -

"Another facet of the Federal Water Pollution Program which is now pending before the Congress is worthy of note. The legislation contains a new provision which recognizes that, particularly in our older cities, one of the tough, difficult, hard to solve, almost impossible to solve, water pollution problems arises from the fact that many older sewer systems collect both sanitary sewage as well as storm runoff. The result is that we can build very effective modern treatment plants, but every time it rains the volume of water flowing through these combined storm and sanitary sewers is so great that you have no alternative other than to bypass the sewage treatment facility allowing all the storm water to flow into the nearby river or stream.

"The result of this, of course, is the same as had the city not built the sewer treatment facility in the first place.

"It is worse because a high volume of storm water flowing through the sewer system at a high speed, succeeds in flushing out all the accumulated sewage.

"Until and unless we can successfully lick this problem, we are not going to do the job which needs to be done in cleaning up the rivers and the streams of the country. Recognizing this problem, the Congress is about to pass, I say with reasonable optimism, an amendment to the Federal Water Pollution Control Act which would permit our Department to expend the sum of $20,000,000 a year on this problem for the next four years. This money could be used in experiment, research, and demonstration projects trying to devise effective ways and means to cope with this problem which comes from the existence of combined storm and sanitary sewer systems. We all recognize that tearing up all your streets today to install separate storm sewers would be frightfully expensive, terribly annoying to the taxpayer, and probably by the time the whole thing was through, you would be lucky if you had your sanity and amazed if you still had your office.

"We are trying to avoid these horrible consequences by searching for a way through the expenditure of seed money.

G. Remus

"We hope we can demonstrate that there are ways and means of doing this job, ways of coping with this problem, that are less expensive, less annoying, and more effective than tearing up our streets and putting in a totally new sewer system in our cities."

* * *

MR. REMUS: I would also like to place in the record that we received this report on May the 11th. Today is June 17th, and a large technical problem of this kind, when preparing a report on it, may create a situation where we have made some statements in the report that should be double-checked.

We do not know that those are in there, but if they are, we would like to have the privilege of correcting it. After all, on our report, nobody had time to edit it for seven months.

MR. STEIN: Well, how about our giving you seven days after this is over to edit it before we close the record? I know you can handle that. Is that all right?

MR. REMUS: That will be satisfactory.

MR. STEIN: All right.

MR. REMUS: Again I want to point out that I am only going to discuss principal points relative to what we are now doing and what we intend to do in the future.

The problem, from our standpoint, develops this way: Today the national policy is directed towards stream renewal. I would just like to point out that Detroit started in 1940.

The issue, of course, is not whether the river has to be cleaned up. The Detroit River must be improved.

The issue is, how can this best be done with the available money that we have to work with?

From our standpoint, first things first. In 1940, Detroit built a 27 million dollar plant and put it in, and it has gradually been improved, interceptors have been built, repumping facilities have been built, more equipment has been installed, and we will continue on that course.

But at that time, and as time developed, it became apparent that you could not develop one sewage system for each municipality in the area, and someone had to figure out a method whereby we could develop one system for the area, or at least substantially so.

In 1957, this program was reaffirmed. I just want to point out that today there are 61 sewage systems in this drainage basin on United States shores, and if we had not in 1957 developed a program whereby some of these communities, instead of being organized together with a central city to develop systems, we would have had in excess of 100.

Using that as a basis to work with, it follows then, how do you best handle this problem? Can it be handled piecemeal? Our answer to that, of course, is it cannot.

So there are three basic factors that must be met. We must have an administrative setup, we must have a method of financing available to us, and then we must have a program of gradual improvement.

To point out how that has progressed, we would just like to review the record.

The entire program is based on the same type of governmental and contractual arrangement that is worked out for the water program. It is a program whereby, on a revenue base, with contracts that are prepared between the central city and the suburbs, we provide a service and charge for that service. The contract specifically goes for water and sewage, that we will provide that service at cost.

The contract specifically says that as improvements are available and can be made, we will make them.

Specifically, in 1957, we said that we would adopt intermediate treatment or chemical precipitation, and we have been making some progress on that, and we are doing a lot of research work on it.

Sticking to the business aspect, the contracts provide that the system will gradually develop in one uniform way, that everyone will be doing their part, large and small. That gets us out of this business where everybody sits on the sideline and pokes at Detroit and says, "Come on, get going. What about the rest of you?"

I think you will notice that in these proceedings, the biggest effort is directed towards Detroit. A large amount of that is because those who do the poking towards Detroit don't have to do anything themselves.

In 1964, the program we were on was reaffirmed. The six counties of this area looked at it and said, "Let's get the work going to the standpoint of the entire drainage basin." In order to do that, we had to have three conditions met.

One is how to administer it; second, how to pay for it, and, third, what has to be done?

The areawide approach was reaffirmed last Friday by this Metropolitan Fund, Inc., a blue ribbon committee that again looked at this business of how to handle the services for an area. Again they said one area serves for the area on a utility basis.

That is nothing new. We knew that. In fact, we have it in law as far as our electric service is concerned, our communications, and our gas company operations.

Now the issue is further expanded to the effect that the impression is created that if we spend enough money, if we reach high enough as far as expenditures are concerned, that we will have a clean stream down there, and that we have answers for all the problems that exist.

Of course, as I go through my report, I will point out that which we know the answers to, what we are doing about it, and those that we do not know answers to, and what we think should be done.

Before I go on, again I want to point out that both water and sewage, the two essential services you need to make an area prosperous, have been organized on a business basis in the metropolitan Detroit area in a method that has not been used anywhere else in the country.

In the water program, we are further ahead than we are in the sewage program, and of course we would expect to be, but the sewage program has developed far more rapidly than apparently the public has been aware of.

Today we serve 49 communities besides Detroit. We have picked up all the additional pollution load that was in the Detroit River, all the additional pollution load that has developed due to the large industrial expansion in the area that we serve, and, on top of that, we have improved the Detroit River. I will reflect on those factors in a little while.

Gerald Remus

With the administrative setup of having an areawide commission to operate the system, we are then asked to determine or to reveal to you or review with you what money has been spent.

I mentioned the 27 million dollars in 1940 to build a plant. In 1957, another 32.8 million dollars was committed for improvement.

This improvement within the Detroit system, and the fact that they were building dams around Detroit for lack of proper sewage facilities, initiated a program that got the ball rolling, to the extent that since 1957 there has been $266,900,000 spent for collection and treatment of wastes of our area, of Macomb, Oakland and Wayne Counties.

The 1957 program, when it was adopted as to what we were going to do, was reviewed with many agencies, and we expressed very clearly what we were going to do. We worked with the State Board of Health on what we would do, what construction would take place.

And again I point out that we used revenue bond financing for all our work, and in order to issue bonds we must have solid data to work from, we must have a good organization as far as being able to carry that out, and we must be able to show results and say what those results will be ahead of time, or otherwise we can't get the financial backing we need to do the necessary construction.

The work schedule since 1957 roughly was due to the fact that we built additional sedimentation tanks, additional sludge filters, large effluent conduits, emergency outfalls, sludge incinerators, repumping facilities, improved operations systems during storm runoffs, improved bacteriological treatment, and, in addition, there is now and will be continued for some time a 50 million dollar program for enlarging the size of our storm sewers, which are designed so they will fit into the system and help in abating the storm flow operation.

I want to make just one overriding statement here, that in the Detroit area, this is the only area where we have been making real good progress on having an organization to do an areawide job which is essential. We have the financing basis to do that which we have committed ourselves to, and we are doing it, and the results show that we have.

A great deal of the data that I will now refer to in these coming paragraphs here you will find in the U. S. Public Health Service report. I think, however, I should call your attention to the fact that they didn't highlight it. The parts that were highlighted were those that needed his attention, and I use that statement or sing the song in reverse. They accentuate the negative and eliminate the positive.

Now, the method whereby we determine whether we are getting results on the Detroit River are these coliform reductions.

In 1959 a median value was 68,000 per one hundred ml. That is the actual bug count.

In 1960, 23,000.

In 1961, 53,000.

In 1962, 16 hundred.

In 1963 580.

In 1964 930.

The agreed-upon level between the United States and Canada is 24 hundred.

The data I read to you includes the sewage plant outfall, but does not include the Rouge River involvement.

Incidentally, the Canadian shores showed in the range of 9 thousand, 4 thousand, 33 hundred at this time compared to our 580 and 930. I did not know until I read the United States Public Health Service report that there was a standard for beaches, bathing beaches, but there are indications that it is 1 thousand organisms per ml as the standard. So, except for storm flows and on the basis of bacteria count, we meet their standards for the quality of water that you need to swim in as far as a beach is concerned.

Now, this was done by a great deal of expenditure of money for additional chlorination, additional diffusion, additional settlement basins, as I pointed out, and we think more can be done in this business of disinfectants, but we believe that the sewage plant has done about as good as it should be required to do as far as this particular phase of it alone is concerned.

In fact, the median values for the sewage plant effluent for the year was the equivalent of the organisms that would be developed in the waste of 23 people; and, remember, we have close to three million people on the system.

Since 1948 the grease and oil found in the Detroit River has been reduced 79 per cent; the phenol 71 per cent; ammonia 22 per cent; cyanide 72 per cent; and syspended solids 51 per cent.

I would review just a little bit this data again, because I would like to call your attention to the fact that the United States Public Health Service report follows along with this type of improvement. The work we have now under construction for improvement is approximately 2,200,000 dollars of work at the sewage plant for additional filters so that we can increase our detention time.

We have a sedimentation basim. We have improved smoke abatement equipment going in. We are developing improved sludge conditioning facilities, and we are improving our grease handling equipment. In addition, we spend better than 5 million dollars a year just in operating costs. We are doing an extended job in resetting our regulators so as to control the storm flow that goes to the River.

This is a large job and takes a great deal of study to properly set it, because it is an evaluation of dry weather flow versus storm flow.

Now, just one thought as to whether we are up the ladder high enough on this treatment process. The point that I wish to make is that by taking care of the area development it was possible for us to collect those wastes that would not have been taken care of, and the record shows this to be a fact; even if we had increased our treatment level, the net result for the

River would have been negligible, if improved at a...

The reason I mention that is that it is for that reason that it is imperative that we set up a system to collect the waste at a reasonable treatment standard before we raise the standards, and when we do raise those standards, they should be raised on the basis of a reasonable and regular improved factor, knowing what we want to do and what results we would show after we have a new treatment process that is adopted.

The objectives, of course,of our operations here are to continue to expand the collection system. Our objectives and our actions already indicate that the gradual improvement of treatment has taken place.

We are formally committed to the State Board of Health to put in improved or chemical precipitation as a treatment process, and that we are working on and spending a lot of money to try and bring the one great problem that exists in the area under better control, namely, the storm sewer operations. This eliminates one of the serious problems which I reflected on just a second ago, that if we do not expand the system there will be no machinery available to gradually eliminate the 177 thousand septic tanks that yet exist in the City; nor will there be any machinery available to help eliminate these little sewage plants that were developed for one suburb only, and now that the area has developed they are grossly overloaded.

Our program for the future, as far as we are concerned is to keep to the objectives that I have just mentioned.

Now what will this cost to develop a system, to make the gradual improvements to the treatment, to take care of what has to be done in this drainage basin;so that we do not become stymied in the development of this area, it will take 180 million dollars worth of plant and interceptor facilities in the next 18 years.

We have the financing rate set up so that we can finance that construction.

You of Detroit will remember that in 1957 we raised the sewage plant rate 77 per cent so that we could build a financing base that would support revenue bond financing so that these improvements could be made gradually with the revenue officer recognizing in some areas that the first few years the revenues will not support the development. This revenue base must be protected. We have a plant that will take care of 4 million people at the present treatment standards, and we know that we have a little less than 3 million on there, so this becomes a part of what should be done to develop.

Now, the major work that we plan for construction in this development is again a repitition of what I have already mentioned: additional sediment basins, interceptors for Oakland and McComb Counties; complete monitoring system of our storm flow so that we can better control our storm flow; preventative sewer cleaning; more disinfection; expanded sludge filtraion capacity; improved regulating and diverting devices; and whatever treatment is necessary to protect the public health and welfare.

Now, there are several points of this job that we think are subject to a considrable amount of review; and we think that much progress can be made on two fronts. One is one I have already reflected on, and that was the storm flow. The second one, however, that we believe a businesslike program can be developed on is one that we must and will develop a program whereby we will control and work out a treatment process with those industries that have special treatment problemd. Many of the factors that come into our plant cannot be treated by the plant and therefore should not be allowed in. I am referring to phenols, oils of some nature. I would like, however, to point out what I mean by that. I see Mr. Baldwin of Chrysler Company up here. On two points we were able to work out with them an improvement that involved some treatment by them, and then something that with our system we were able to take care of critical oil wastes effectively with a minimum of cost to them, and as a result with their effluent being handled in our system.

Secondly, we have developed what we think is an indication of what can be done and what must be done in this process of pollution control. We call it preventative pollution development, or you can use any type of terminology you want; but this idea of preventing this situation developing is the fact that they now by grinding oils for the purpose of their processing,that does not include phenol, one of the culprits that we have to continually contend with.

We think that every industry in the area--particularly when you recognize that our wastes are changing each day, particularly the wastes of the chemical industry, the radioactive industry, the high concentration of new materials that are used in the processing of these metallurgical products that are used in our space program, we think it is particularly important that we know what those are before we get in the business of trying to take them out of the plant and throw them in the river.

There is a limit to what a modern treatment plant can handle. In our position, I want to make it very clear that we intend, with business, to work very cooperatively, that we intend to do this on a preventative basis, that we do not believe it could be done by us using police action. We believe that the end result will be good for the industries in that it will save them money; it will help us in our processing so that we will know what will be coming in there. And I want to make it very clear that with this type of operation we have before us a method of financing this approach.

The City of Detroit this July has set up for the first time the operation in the Department of Water Supply on this phase of this problem.

Now, there is one phase of the points that I want to touch on a little bit, and that is the relative questions of water and sewage treatment. It is our opinion that water supply and sewage treatment is one economic problem, and unless we can find other means of doing this job, of handling it, except with money, then we have to treat it as one economic problem.

Gerald Remus

To show what can happen, I would like to just cite one example; that we, if we adopted all the treatment processes that we think might help the river, and even if we could get ahold of the money, we would have to raise our rate in excess of 380 per cent for sewage treatment. We all know that water supply and sewage treatment is billed on one bill in Detroit. That would constitute almost, or approximately doubling the bill every family would get in Detroit. In some of our suburbs it would be more.

If you doubled the water bill in Detroit, as was done in Flint, where the rate was increased 50 per cent and the usage dropped 33 per cent--a strong indicator that if you do not use good progressive business practices in the operation of your system, that it isn't long that you can just overload yourself with obligations that will ruin your entire business operation.

That, of course, is the thing that we watch very closely because we have an AA rating on our bonds or investments base for water; we have an A rating on our sewage; and for the benefit of the people from the Detroit government here on the Water Board, I would just like to point out that that is better than a GO bond in the City of Detroit.

Gerald Remus

I would like to reflect on what the U. S. Public Health data shows has occurred in the Detroit area; and I would just point to some of the factors. The coliform bacteria has decreased 99.99 per cent; the fecal coliforms have decreased 99.9 per cent; fecal streptococci 99.9 per cent; suspended solids 51 per cent; oil and grease 79 per cent; ammonia 22 per cent; chlorides in the lower river 18 to 44 per ml--U. S. Public Health Service, milligrams per liter, U. S. Public Health Service drinking water standard permitted, 250 milligrams per liter.

We also read in their record that our sewage and storm water system is large enough so that when we have storms that we can retain up to three-tenths of an inch of rainfall, the first flush of a storm to that extent which does the most damage when it rushes to the river.

The data that I read to you is the data that is measured below the sewage plant outfall, so that no one gets concerned about the record showing that we are moving it down-river, and in effect doing a situation there that causes us just to move our dirt to some other area.

Again I want to make it very clear, so that is not misunderstood, the factors that I have given you that are in there from our records -- the factors that are in here -- that were also reaffirmed and are mentioned in the U. S. Public Health Service report, are data that was prepared in the process of this report and ours; total reports below the sewage plant outfall. So, the effects of this waste from 3 million people, with the greater portion of all the industrial wastes of the metropolitan area included, are included in this program or in this data.

Now, there are some factors that I want to bring in here that I think cause us a great deal of concern. I don't mean I think; I know it does.

The report of the Department of Water Supply shows that on the suspended solids, from 9,125 samples, that we had a removal of 49.5 percent of those suspended solids. The U. S. Public Health Service record shows that they took 16 samples, and the percent of removal was 39 percent, or 10 percent less.

Our record shows that we took better than 9 thousand samples on settleable solids, and that our removal was 84.3 percent for the system for that period of time, that is, over quite a number of years.

The U.S. Public Health Service samples of

16 shows 52 percent, almost half.

Likewise, as to the BOD, in 9 thousand samples or better there was a removal of 37.2 percent. The U. S. Public Health Service samples of 8 show a removal of 17 percent.

Now, we believe that that is too wide a margin, and we believe that if statistical data of this kind is published and is used to support various positions that various people may take, you have just about cut off our capability of developing a system, because anybody can take this contradictory data, when we wish to issue revenue bonds, and go up to Lansing when the Municipal Financing Commission wishes to act on it, and say, "Well, we think they are not giving you the true facts. Here is what the facts are." As a result of that, the two positions make it impossible for us effectively to issue revenue bonds.

I say that, because the State law says you cannot issue revenue bonds if you have a lawsuit, or an impending lawsuit. Anybody can start a lawsuit in Michigan for 16 bucks now; and certainly, if we wanted to improve the plant, why this is wide open data for no progress. So, before any decisions can be made on secondary treatment or any other improvement, this data must be resolved. Our data has never sufficiently supported the necessity for secondary treatment. We have very energetically supported improved treatment; but I wish also to point out that our finance base in 1957 that was established was built to improve the system on a basis of treatment standards that were agreed upon between the State health officials and the Detroit Water Board; it was based on the fact that we would make certain expansions to the system, to the collection system, to the site of the plant, and that is now firmly financed; that if we, however, take on another obligation of the type that our consultants tell us will be 129 million dollars, on top of the 181 million dollars that we have committed ourselves to, then, of course, we break our financing back and we are not in a position to proceed.

So, if the higher forms of treatment after we get the data reviewed clarly shows that secondary treatment will improve the river, if it clearly showed the nature of the improvement, which is not now shown, and if it clearly shows that we will be able to keep the wastes under control, then, of course, with the additional money that could be made available, we could probably proceed on that matter, but we are not in a position at this time to make that decision in that way. We do not intend to pause on our stream renewal efforts. We intend to continue on the program adopted in 1957 and reaffirmed in 1964. We are actively engaged in various types of research now, and we shall cooperate with any agency that has any capability or in any way toward improving our research program, because we believe that in this area a great deal has to be done.

I am talking about such wastes as sulphates and nitrates. I am talking about the storm flows which Mr. Quigley, Assistant Secretary of Health, Education, and Welfare reported on to the National League of Cities about a month ago where he said there is no practical answer for that.

I want to just make one further comment. I am referring also to the so-called aging of the lakes and of all the things that were found. It surprises me that U. S. Public Health Service's report couldn't find the 50,000 cubic yards of dirt that go down the Detroit River every time we have a storm, or the 4700 cubic yards that go down every day that cause most of your dredging problems, and we have letters from the Army engineers that so indicate.

So, in my final conclusion here, I just want to point out that we intend--we again re-emphasize that we intend to continue our stream renewal program by expanding our area-wide operations, by improving our treatments, with special attention to pollution prevention, and by energetic study to control the wastes , for which the technology today has no sollution.

And finally here now--and I will get it in the record that we challenge anyone on the Great Lakes, particularly in southwest Wyandotte in the communities on the Rouge, the Raisin, and the Clinton Rivers, to do better than we have been doing.

We think we can continue to improve at a faster rate. I think the record shows we have, and we shall continue. This is the summation of my statements. The technical data is recorded in the reports. If anyone wants those reports, if they will send us a card o r give us a note; to the extent that we have them ready, I will pass them out here today; but otherwise we shall mail them to you.

Are there any questions?

MR. STEIN: Thank you, Mr. Remus. Before I open this to questions, I just have two clarifying questions. Is your challenge to the communities on the Great Lakes extended to Chicago? That removes better than 90 percent.

MR. REMUS: No, I did not mention Chicago, and I didn't know that Chicago was doing it.

MR. STEIN: Anyone on the Great Lakes, you said. I just wanted to clarify that.

MR. REMUS: What do you mean, "removes 90 percent"?

MR. STEIN: B.O.D. and solids.

MR. REMUS: That wasn't how I read your report on Chicago.

MR. STEIN: Did you read our report on Chicago?

MR. REMUS: I looked it over pretty good.

MR. STEIN: Well, that is what Chicago says. I won't dispute it, and we didn't.

One other point in clarification before we go on. Since you did mention Secretary Quigley's remarks, and I was called down to speak to the Secretary on this, the point is, I don't know that he said -- or we think that he said -- that there was no practical answer as to overflow from storm sewers. As a matter of fact, we think in the case in Washington, D. C., we did come up with a practical answer. The Congress evidently thinks it might be different. They have appropriated 20 million dollars for demonstrations. They wouldn't think that you could demonstrate unless they thought it very well might be answered.

I think the question here is to devise--or the report says, as I understand the Public Health Service report, to set up a study to see what could be devised as an answer as to storm water overflows. We were with the Michigan people, as you know, in the Miami River--you remember some of the communities up there had storm water problems, and they came up with what they thought were practical answers. They were smaller communities, it is true; but I don't know that Mr. Quigley--and I am just saying this for the record--has ever said that there was no practical answer as to storm water overflows.

As a matter of fact, I think Marinette, Wisconsin, has a program, if you will remember, Mr. Oeming--

MR. OEMING: Yes.

MR. STEIN: --to eliminate storm water overflow over the next ten-year period.

MR. REMUS: Could I give you the reference on that?

MR. STEIN: The City engineer came in and told us what he was going to do.

MR. REMUS: No; I mean Mr. Quigley's statement. Mr. Quigley's statement is recorded in essence the way I said it in a speech before the National League of Cities; and a copy of his speech can be obtained from Mr. Hemey, who is the executive head of the National League of Cities--executive secretary.

MR. STEIN: Mr. Remus, I didn't just glance at that speech; I read that speech, and everyone in our organization read that speech and the sentence you refer to. It very well may be your opinion that Mr. Quigley said that. It is not ours; nor is it Mr. Quigley's.

MR. REMUS: As a matter of fact, we do not subscribe to it, either, because I pointed out that we have had a great deal of improvement in our storm flows. The Conner Creek complex, we have reduced that overflow from 7 billion to 3 billion. We have reduced the number of spills from 61 to 41. We think we can do more by the so-called control of our system whereby we would operate our system more to keep the interceptors empty, particularly at a storm flow so that the first flush can go to a sewage plant. We have built an overflow at the sewage plant which has just been completed. It is not working as effectively as we would like, but the reason is that our chlorination equipment doesn't behave the way we wanted it to, but we are going to improve that. So, I am not saying to you we aren't going to do anything, but I am saying that the treatment in the plant, the improvement of the plant will do very little as long as we have these other problems and don't get them improved.

We believe that the concentration of effort for what moneys we can get hold of under our program should be directed toward reducing the storm flow, toward intercepting the wastes that would not go to any sewage system if we didn't expand the system, and that we would, by secondary treatment no, but by chemical precipitation yes, be able to finance the necessary improvements. I am talking strictly from what we can pay for, and I wouldn't dare talk from any other basis because it would be misleading to do so.

MR. STEIN: Well, I can see we are in a substantial measure of agreement that something can be done on storm water overflow.

I have just one more thing for clarification. At the beginning of your remarks, Mr. Remus, I took a note of a sentence I thought that you said, and I want to clarify this, if this is what you said: that in 1957, as long ago as that, you decided on improved treatment, on intermediate treatment, which meant precipitation, and you were happy to report as of the present time you were making progress and doing research.

Was that your statement?

MR. REMUS: Correct. I would like to read you the paragraph in the report of 1957, which is an exhibit in your report, where it says "improved treatment methods." The plant is called upon to handle more and more solids, better methods of treatment are needed to remove the greater percentage of the solids from the sewage treatment plant.

In the letter that we received from the State Board of Health, it was clearly defined that this meant an intermediate form of improvement or probably chemical precipitation.

MR. STEIN: And this has been considered since 1957?

MR. REMUS: Well, we have been doing some of it; that's right.

MR. STEIN: In other words, that is

substantially correct, that you are making progress, and research is being done?

MR. REMUS: Correct.

MR. STEIN: All right. Are there any questions? Mr. Oeming, do you have any?

MR. OEMING: Well, I had a question, Mr. Chairman.

Mr. Remus, on this additional or improved treatment process, what was the program in 1957, not with respect to what the improved treatment process would be, but as to timing.

MR. REMUS: Well, the first steps--the first moneys we could get ahold of were being geared specifically toward holding the treatment standards as they were then substantially and intercepting what wastes there were around the periphery of our system, because we felt it would do no good to raise our level and not intercept those wastes. The timing was, I believe, spelled out, and I don't want to be held to this exactly, but I think we said that by 1965 we should be at the secondary treatment, or at the chemical precipitation process.

MR. OEMING: Well, then, you said this program was reaffirmed in 1964. Did this change by

1965; starting in 1965, you would be in the improved treatment process, when you reaffirmed that-- Do you remember what I am speaking about?

MR. REMUS: Well, what we said, in 1964, or what the board of consultants said in 1964 was that as the specific cures were found for specific wastes, those would be adopted. And we think that some of the ones on improved treatment that I have already reflected on have been done, such as we chlorinate more than we ever have, and we are in the process of evaluating pre-chlorination. We are buying four large drum filters so that we can filter more and thereby extend the sedimentation time. The pre-chlorination we think will drop out more wastes as far as our sedimention is concerned, more solids, and in that area is where we have been working.

MR. OEMING: Well, then, there wasn't a reaffirmation, was there, of the time schedule?

MR. REMUS: No, it is sort of a continuation.

MR. OEMING: I see; all right.

MR. STEIN: Let us see if I understand you: The time schedule indicated that there was going to be this chemical intermediate treatment by 1965; is that what you said?

MR. OEMING: No, no; this isn't what I said.

MR. REMUS: Improved treatment.

MR. OEMING: Mr. Remus has said that by 1965 they would install improved treatment processes. That was the original 1957 program.

MR. STEIN: What did that improved treatment mean? Is there anything specific?

MR. OEMING: The estimate of cost I think that was made at that time was included in this program based on chemical precipitation.

MR. STEIN: Right.

MR. OEMING: Now, what I asked Mr. Remus was, in 1964 he said the program was reaffirmed, and I wondered if this meant, in so far as time was concerned.

MR. STEIN: That in 1965 we would have this.

MR. OEMING: Well, it would start.

MR. STEIN: Yes.

MR. OEMING: And I think his answer was that --

MR. REMUS: You member that the 1965 data -- I am not sure that that was specifically 1965; I think it was in the range of 1965 to 1967, in that area.

MR. OEMING: Yes.

MR. REMUS: I would also want to make it clear that the board of consultants that reviewed our program at the request of six counties did not specifically reflect on chemical precipitation. They just said that improved treatment should be made in those areas where definite indicators were as to what they are.

MR. STEIN: But, again, I want to just clarify this and understand this; (1) they said improved treatment, and there was then an assumption, either directly or impliedly this time that that would be secondary, chemical precipitation, and (2) there was no mention this time of the date as to when this would happen; right?

MR. OEMING: Well, I guess Mr. Remus better answer. I think that is what I understand.

MR. REMUS: Well, I don't know whether I am understanding it properly, but let me say this, that this period of time of the mid '60s, we felt we would be ready to go at it at the improved treatment. One of those probably improved treatment methods would be chemical precipitation.

The program that the six-county people reviewed, as far as I know, they did not reflect on the chemical precipitation.

MR. STEIN: Did they mention a date when this improved treatment, chemical precipitation--

MR. REMUS: I don't remember it that way.

All they said was that we would continue in improving on the treatment of those wastes for which we had definite answers for. That was their recommendation.

MR. STEIN: Well, this is the question I would like to ask: Since at least intermediate treatment and chemical precipitation were considered in 1957, and you are making progress and doing research, do you think we have definite answers now, or we have to have a little more research and make a little more progress?

MR. REMUS: To the present time we do not feel that we definitely recommend a method of construction.

MR. STEIN: All right. I think I am clear now. Do you have any further questions?

MR. OEMING: No.

MR. STEIN: Mr. Poston?

MR. POSTON: I am glad that Mr. Remus has conceded that this river must be cleaned up, which follows along with Governor Romney, Governor Rhodes, with the Conservation Commission, and the Public Health Service. I think everybody in general is agreed that there must be additional clean up in this stream. And Mr. Remus also indicated that stream renewal is going to be kept up, and I think this is in the right direction.

I noted that you talked about this chemical precipitation, and I would like to pursue that a little further, this being a type of intermediate treatment that obviously the City must have investigated, and I wondered if they had information on installation elsewhere, or where they might have been operated continuously to give some idea of the kind of results, whether they were successful, and then how much this chemical precipitation might be expected to cost in terms of installation and operation.

MR. REMUS: Well, you have got about five questions there.

MR. POSTON: Yes.

MR. REMUS: The chemical precipitation, from our standpoint--we have done the following things:

We have put diffuser nozzles in our sedimentation basins going in and along the lines hoping that we could do some chlorination there; oxidation that would help the situation.

We have half the plant on a filtration process, using as a water agent the Palmer; we are continuing with Palmer; we are continuing with that contract for another year--another six months, excuse me.

We are also in the process of evaluating the use of these dewatering agents by injecting them in our sedimentation basins, hoping that it will drop out more solids. The laboratory analysis indicates that it would. It probably has been that every time we start with this type of a situation we get in a position of a large industrial system like this; the quality of the wastes change; and we get a concentration of a different quality of material so that the formulas that have been perfected for the treatment at the time will not work in the next hour or two; and in that area we haven't been able to get uniform results, and as such we cannot commit a large amount of money. Until we know the answer we couldn't evaluate the cost. But we do not think it would be exorbitant; and then we are even hoping that we could carry it under our regular financing operation if we had to.

MR. POSTON: Isn't it true that Minneapolis, Minnesota, built a chemical precipitation plant many years ago and that this was never really used and now they are going to activated sludge processes as a way to handle their pollution problems?

MR. REMUS: I don't know.

MR. POSTON: I wanted to ask also if your southwest water intake wasn't located in Canadian waters.

MR. REMUS: Well, first, are you asking me, did I make that decision, or was I involved with it? I wasn't.

MR. POSTON: No.

MR. REMUS: Secondly, I don't think it should be in the location where it is. I expressed that opinion when it was being built there. I don't think,however, that secondary treatment, or any form of treatment would have changed that position, because I don't think it is wise to build a water plant below a situation whereby accidental spills or anything of that kind can involve your water supply. The only way you can cure that problem is move Detroit away; but I would like to point out, however, that that is the very issue that we are talking about on our sewage program, that unless we develop one system for the area and unless we get ourselves in a position so we don't get our supply--that we don't get our wastes and that we don't get our collection and direction systems all tangled up, we are going to pay very expensively for the type of development we are doing.

MR. POSTON: This, then, probably is a factor in your location of other intakes in Lake Huron?

MR. REMUS: Well, that was strictly, as I mentioned earlier, an economic problem, because we have contracts with Flint; we have contracts as far north as Pontiac; we have contracts in a considerable number of Macomb County; so there were two factors involved, or possibly more, but two principal factors which were that in 1959 when we presented our program the Army and Civil Defense people were very insistent that we couldn't put all this industrial load on one intake up at the head of Belle Isle, so for reliability purposes they insisted that we be some fifty miles separated on this type of a broad system. That was one of the reasons.

The second reason is by us locating it up there we were able to work out a program with Flint so that they paid a portion of it, and again I want to recite just a little bit of the business processes that cause us to have to function the way we do; that it would have cost 167 million dollars, if I remember those figures right, for Flint to go alone and Detroit to go alone; that by combining our efforts we were able to do it for 117 million; that by that saving alone, it amounted to 3 million 6 hundred thousand dollars.

That is why we wanted those contracts, because we could provide water cheaper for all that are on the system.

And then a third basic reason would be this business of putting an intake below a large industrial complex where, even if you had the highest quality of treatment, you still wouldn't be using good judgment in putting it there, because you would be subjected to all the accidents that can happen in a large complex of this kind. Costwise that isn't justified because you have to spend too much money in the development of your plan to be able to effectively provide water. Now we are going to serve water out here but it is going to cost us more to do it.

MR. POSTON: I note that Wyandotte has a number of procedures that they go through to provide additional protection in their water treatment plant, and I wondered what measures in the sewage plant you take to protect the downstream water users, whether they have alarm systems, extra chlorination facilities, and this type of thing, and I wondered what safeguards you have, to provide a continuous operation that would protect the downstream water users.

MR. REMUS: Well, we used to notify them every time we had any trouble, but if you will remember, you were here, in the 1962 report they read records from it back to 1940 or earlier, on every telephone call, and then appended it into the record in such a way that it indicated we failed each time we told them there was something of an unusual nature coming down. In my estimation they broke off any necessity or any chance we had of reporting it to them on unusual material or waste.

MR. STEIN: I don't understand that; why?

MR. REMUS: I couldn't tell you.

MR. STEIN: Why did you break off?

MR. REMUS: We were giving that information as a neighborly situation so that if we had an unusual sludge or oil--

MR. STEIN: I understand that, but you said they did something in 1962 which you figured you didn't have to give it to them. Don't you think they would still be neighborly? Generally cities would do that.

MR. REMUS: If they hadn't put the worst on what we called them and put it into your record on how many times the sewage plant broke down, probably that factor will be yet in existence. It can be established if it can be done in a businesslike way.

MR. STEIN: Do you mean to say before 1962 you were neighborly to the people of the city of Wyandotte to protect them when a sludge came down, but you were unhappy on something that the Wyandotte water plant put in a 1962 report , and because of this you are not giving them the information any more?

MR. REMUS: No; we have all the information available; some of the State people, and everything else; but we took an extra effort to call them on every little thing.

MR. STEIN: But, I mean you are not calling any more since 1962?

MR. REMUS: No, not with that interpretation.

MR. STEIN: Well, how about the people of Wyandotte? Don't you think it would be neighborly to let the people know?

MR. REMUS: If the connotation isn't placed on it every time we call them that the plant broke down and that you people get a big report on it, then yes, we would do it. We will do it now if it can be done in a businesslike way, but we cannot do it on a propaganda basis.

MR. STEIN: I think your position is clear, Mr. Remus.

Do you have any more questions?

MR. POSTON: You said something about lake aging, but I missed your connection and your presentation about aging. Will you clarify your comment on lake aging? Do you think that Detroit might have contributed to this lake aging?

MR. REMUS: Well, I think we contribute; but let us establish also that the aging of the lake has gone on before ever Detroit was here. It started when the earth was born. And I pointed out that there are 50,000 cubic yards of dirt going down the river on a stormy day from this entire basin; on that day we put in 240 tons, roughly, of solid material. I grant you the wastes are somewhat different, like phosphates and nitrates which act as nutrients, now make the problem more complex; but to create in the minds of the public that it is possible to correct this by putting in secondary treatment gets a little--and that is the image that is gradually being created, and that is the image I am trying to point out wasn't even reflected on.

MR. POSTON: I wondered whether in your water intakes that are located in Canadian waters, whether there is any reason to believe, or any agreement with the Canadian officials that they will protect you from pollution on the other side of it in this location.

MR. REMUS: I believe only, to my knowledge, the extent of that is written into the International Joint Commission records as to what the mutual agreement between the U. S. and Canada is.

MR. STEIN: Do you have any further questions?

MR. POSTON: No. I think that is all.

MR. STEIN: Well, I wonder if I may raise a question. I think we need this for clarification, if the conferees and Mr. Remus would go at this. I think there were several statements made on differences in figures in suspended solids, settleable solids, and B.O.D.

Now, I wonder (1) if we can. I do not know whether our people or anyone else can have a comment on this.

Secondly, I wonder if they can be reconciled or not.

Thirdly, I want to know whether for the purpose of these deliberations it makes any difference.

Now, I think you have raised the question, and I think it is a good one; but, I wonder, do you have any of the technical staff that can possibly comment on the apparent inconsistencies in the figures, Mr. Poston?

MR. POSTON: Well, I do not think right at this time.

MR. REMUS: I would like to point out that from a technical aspect I, myself, would probably go along with Mr. Stein--whether it is important or not is another thing--but from a financing aspect, it is important, because if we want to move and expend money we do not leave an open door for anybody to start some entanglement so we cannot get our financing.

MR. STEIN: I would agree with you; I couldn't agree with you more on that, Mr. Remus; unless the other conferees have any points; but I think these are measurable figures, and I do think that when and if you have to go before the bond market, that all agencies should have these figures reconciled; State, Federal, and Local; so we don't jeopardise any financial position. I do not believe that, from my experience, that this necessarily will occur.

You know your local situation and the laws of Michigan better than I do. But from my experience I haven't run into this on this kind of an issue. I haven't run into a hold-up yet; but this can be reconciled.

Mr. Oeming, do you want to make a statement?

MR. OEMING: Well, Chairman Stein, you asked a question whether we should not try to resolve some of these questions here at this time. It seems to me that there are not only issues raised with respect to the data, itself, but with respect to the analysis and interpretation of the data that Mr. Remus has raised here which are not properly -- cannot properly be resolved at a conference of this type. It seems to me that this is subject to a different kind of proceeding than we are involved in here; and they need to be resolved, certainly.

MR. STEIN: Right.

MR. OEMING: But this is not the time, it seems to me, to get into this thing.

MR. STEIN: Right. My question was directed toward methodology, not on the interpretation, and I would agree with you. Very often when we have come up with different figures, sometimes we find someone has used a Phelps index; someone has used a little different method of measurement, and very often, pretty rapidly at the conference we can indicate if there were slightly different techniques being used that we did not have an irreconcilable difference. So, I don't know that this situation was the same here or not. Perhaps we had better wait, and if this comes up again, as Mr. Poston says, or we do get information of that, we shall leave the record open so that you can put it in. Because I would like to see just how far we can go on this before the conferees come to a determination.

MR. POSTON: I should think that we should make some comment on these.

MR. STEIN: But you would want a little more time.

MR. POSTON: I would need a little more time to do that.

I do have one comment. Mr. Remus indicated that the report accentuated the negative and elimination of the positive, or something to that effect; and I would say this depends on how you look at it; whether you are thinking in terms of the pollutor or the user, and the user, I am sure, would agree with us on that in your report that pollution should be cleaned up.

MR. STEIN: Do you want to comment?

MR. REMUS: I would just like to sum up once again what our position is: We continue to expand the system; we continue to improve our treatment; we will support the research that has to be done to find the answers.

We think the report should clearly delineate which part of this you have answers for and what those are, and we think you should have a very firm position on what the quality of the stream will be after we do all of this expensive thing, and after that is done, then we shall take the next step.

MR. STEIN: Mr. Remus, I understand that we are prepared to comment if we take a little recess. I didn't want any comment on the data problem to be made while you weren't here; and if you could wait until after recess, perhaps we could take a ten or fifteen minute recess and come back and clear that up and go forward. Is that all right?

MR. REMUS: It would strike me, particularly since some of our samples were taken and divided in our processes,and our treatment or our tests did not give the same answers in some cases that your tests did, that it cannot be resolved here. It costs to be done --

MR. STEIN: No; but I think there should be fair comment to get the record clear to see what the issue is. I do not know that we are going to resolve anything, but I think you should be here to hear the fair comment. I think in many areas where there is a discrepancy, the best we can do is define an issue; and I would like to see how carefully we can come to defining an issue by preparing this comment. I think that the people out there, the little human computers we have, have been working on this, and Mr. Poston indicates that he is not in a position to make his comment on these technical facts until he speaks to the technical people that have done this computation. With that, I suggest we recess for fifteen minutes.

MR. OEMING: I would like to comment, Mr. Chairman, for just a moment.

MR. STEIN: Yes.

MR. OEMING: I have a comment about this.

MR. STEIN: Yes?

MR. OEMING: Well, I don't know what you expected to obtain from this conference, but it seems to me that you are certainly here to explore what issues there are.

MR. STEIN: Yes.

MR. OEMING: And the issues are clear to me. Mr. Remus has raised some issues. The report of the Public Health Service is clear. I see no purpose in now beginning a debating society here. The record is made, and if you need to resolve this issue, this is not the place to do it at a conference. The time comes for this when proceedings are taken to initiate or apply the findings.

MR. STEIN: I do not know that we are going to have a debate. The question here that Mr. Remus raised, there is a ten per cent difference in suspended solids; 50 per cent difference in settleble solids, and a considerable difference in BOD.

If the comment--and I think this is a material point that has to have comment--if Mr. Poston wants to say that these are differences in the measure and we have to resolve them technically, this is fine.

All I am saying, though, is if by the comment we can get closer to the issue and narrow the issue, I would like to have them have an opportunity,to see what they are going to comment on these figures. The closer we can get together and the narrower we can make the issues, the sooner we awe going to resolve any situation; and I am not looking for a debate at all.

MR. OEMING: O. K.

MR. STEIN: Do you have one more comment, Mr. Poston?

MR. POSTON: I have one question about the figures in your Department of Water Supply and Sewage Treatment annual report, operating report, and it shows that in the year 1962-1963 you removed some 123,000 tons of suspended solids, and that you burned some 93,000 tons. I wondered what happened to the difference of some 30 or 40 thousand tons of solids.

MR. REMUS: I couldn't answer that unless I analyzed the data. But since you raised the point we shall look it over and correct it.

MR. POSTON: Is there other sludge treatment than incineration?

MR. REMUS: No.

MR. POSTON: O. K.

MR. REMUS: There might be an error there.

MR. POSTON: This difference is put back into the stream, is it?

MR. REMUS: No; there is no way of getting it there.

MR. POSTON: Well, I--

MR. REMUS: We shall look at it and see what it is.

MR. STEIN: May we recess for fifteen minutes?

MR. REMUS: If that is all you can find in the report that is contradictory, why--

MR. POSTON: Where does 30 thousand tons go to?

MR. STEIN: By the way, Gerry, don't run off.

MR. REMUS: I will stay here for two days, if necessary.

MR. STEIN: All right.

(Whereupon a short recess was taken.)

MR. STEIN: May we reconvene? I hope we can get on with this. Mr. Poston, I would suggest that we give you or your representative an opportunity to make one short comment.

Mr. Poston, I ask that on this issue we confine ourselves to perhaps a single comment, and not get into a real technical discussion, and then we shall allow Mr. Remus, or any representative of his to make any statement that they wish. Do you have any comment or do you have a representative?

MR. POSTON: I have asked Mr. Vaughan to make a brief statement to clarify the discussion of Mr. Remus and the differences in values.

MR. STEIN: Mr. Vaughan?

MR. VAUGHAN: Thank you. I shall try to make this as brief as I can. I would like to make a few statements. After a 30-minute review it is a little bit too Quantitative, but I shall do the best I can.

First of all, I would like to comment on the fact that in our report--that is in the Public Health Service report--we have published the long-term results of the Detroit sewage treatment plant operating records; on page 33.

Second, during Mr. Remus's comparison of 9 thousand samples over several years with our intensive surveys, which were conducted on a 24-hour basis for two, four-day periods this is not unusual. There might not be some difference in there. However, we did split samples with Mr. Remus which he has in his report, and which he mentioned that there is some disagreement between their results and the Public Health Service results.

I would like to say that we furnished Mr. Remus--that is through the State Health Department--with our results, our analytical results, so that he might compare these with his own chemical results.

We did not hear from him until this morning that there was any difference.

Now, as far as the three things: In suspended solids I noted that there is some disagreement in the percentage of removal, but there is very little disagreement; in fact, well within the tests, as to the amount during that four-day period that went into the river. On their report, on page L-1--I could just mention this to you--their effluent was 106 milligrams per liter--no, ours was 106; theirs was 108.

In the second tests ours was 175; theirs was 179.

That showed that ours was just a little less than theirs.

Now, on the matter of settleable solids, we used a different technique. Standard method recognizes two techniques for this; one on a volume-per-volume basis run, in how much settles out in an Imhoff cone, and is expressed as milliliters per liter.

We use a graphometric test of weight per volume which is milligrams per liter, and that is how we reported it in our book.

So, since two tests are used, it is conceivable that two different results could have been obtained.

In the last thing, on B.O.D., there is some difference in the two, which, of course, we haven't had time to completely analyze.

We would like to state, though, that one of the most important things from this was how much biochemical oxygen demand was discharged into the river. We state in our report an average of these, of 525,000 pounds. In the Supervisors Intercounty Committee, which I understand was taken from the Detroit operating records, they estimate 500,000 pounds over a long-term period was discharged in the river. I think this is pretty close. This is all I have.

Gerald Remus

MR. STEIN: Thank you, Mr. Vaughan. If Mr. Remus is here and wants to comment, fine. Or, if he wants to come up at any other time, if he is not desirous of doing so now, and wishes to make his comment on this, I am sure he will be welcome.

Does that complete this?

MR. POSTON: That completes it.

MR. STEIN: May we proceed, Mr. Oeming?

MR. OEMING: Yes, Mr. Chairman. At this time I would like to provide the opportunity for a statement by the Supervisors Intercounty Committee. This statement will be introduced by Mr. Gerard Coleman, Executive Director of the Supervisors Intercounty Committee; and a second portion of the statement will be given by Mr. George Hubbell.

Mr. Coleman?

STATEMENT BY GERARD H. COLEMAN, EXECUTIVE DIRECTOR OF THE SUPERVISORS INTER-COUNTY COMMITTEE

MR. COLEMAN: I am Gerard H. Coleman, Executive Director of the Supervisors Inter-County Committee, a governmental organization comprising the six southeast Michigan Counties of Macomb, Monroe, Oakland, St. Clair, Washtenaw and Wayne.

Since its inception, eleven years ago, the Supervisors Inter-County Committee has concerned itself with the problems of fresh water supply and the pollution thereof. In 1957, the Committee furnished the Detroit Metropolitan area with a master-plan for the supply and distribution of water. This initial study now provides the basis for the Detroit Water Board serving over 60 communities in the Detroit area with fresh water.

As a corollary to the water study, the Inter-County Committee proposed that the entire problem of sewerage, drainage and sewage disposal be examined for possible solutions on a Metropolitan area wide basis. When this conference was originally convened in March, 1962, we submitted to you the scope and involvement of this well-planned study.

Gerard H. Coleman

On the occasion of the reconvening of your conference, I am pleased to note that our study has been completed.

I know that the participants of this conference are well aware of this study and its contents, and I do not intend to belabor the organization or results of our investigation.

I am pleased to advise you that Mr. George E. Hubbell, member of the Board of Consultants, for the study will speak more directly of the study and its recommendations.

There are a few points that are important to recognize regarding the SICC sponsored study and which explain why we are so justly proud of its completion.

First, this study represents one of the first efforts to provide an area-wide solution to sewerage and pollution problems in a major metropolitan area - an area encompassing 4,000 square miles, 214 political jurisdictions, and over 4,300,000 inhabitants. The undertaking of this study evoked cooperation on behalf of the many diverse political instrumentalities found in this vast urban area.

Second, it evinced a financial partnership, between the local units of government and the Federal Government. More important, these two interests were joined most generously by private enterprise - namely, the industrial, financial, commercial, and small business firms in this six-county area. This tri-party support is a remarkable facet of this study.

Third, the study was conducted by an impartial and most respected organization - The National Sanitation Foundation. In turn, the Foundation employed a Board of Consultants which was comprised of three of the most knowledgable experts in the Nation namely: Louis R. Howson, George E. Hubbell, and Abel Wolman, Chairman.

Fourth, the study is now in the process of implementation on a metropolitan area-wide basis. The six SICC counties have the study under advisement and have begun joint discussions that will lead to the implementation of the recommendations contained in the study.

We are not unmindful of recent publicity regarding alleged conflicts between the SICC study and this Federal survey of the Detroit River and Western Lake Erie. Close examinations of the two reports indicate a confirmation of similar conclusions arrived at separately, and that these far outweigh dissimilarities.

The southeast Michigan metropolitan area has made substantial progress in the past in meeting its responsibilities toward the problems of water pollution. With the completion of the Supervisors' Inter-County Committee sponsored study, our achievements will certainly be not less - but will be even greater.

Thank you.

Gerard H. Coleman.

MR. STEIN: Thank you, Mr. Coleman. Are there any questions?

MR. POSTON: I have no questions.

MR. STEIN: As always, Mr. Coleman, it is a pleasure to be associated with you, and thank you for a very helpful instructive report; and your type of attitude, as I hope ours is, is to meet each other at least halfway, and I am sure that is the way the problems can be solved.

Thank you very much.

MR. COLEMAN: Thank you.

MR. OEMING: I believe, Mr. Chairman, and Mr. Poston, that Mr. Hubbell has some further remarks relating to Mr. Coleman's statement.

STATEMENT OF
GEORGE E. HUBBELL, ENGINEER

MR. HUBBELL: On December 10, 1964, the Trustees of the National Sanitation Foundation submitted to the Supervisor's Inter-County Committee two reports, the first being a report on Metropolitan Environmental Study, Sewerage and Drainage Problems, and Administrative Affairs and the second, a Report on Sewage Disposal Problems. Both of these reports covered the Six-County Area of Southern Michigan, consisting of Monroe, Washtenaw, Wayne, Oakland, Macomb and St. Clair Counties. These reports were prepared for the Foundation by a Board of Consulting Engineers consisting of Louis R. Howson, George E. Hubbell, and Abel Wolman, Chairman.

The Foundation has asked the Board to submit a statement interpreting their report on Sewage Disposal Problems in terms of the factual information included in the Public Health Service Findings of April, 1965. In making this Statement, I represent the Consulting Board.

The Board wishes to emphasize that their principal objective was the development of an overall long range sewerage plan for the protection of the

Health and Welfare of the present and future people in the area. The Board is for clean water, giving due consideration to the realities of present and future conditions. We are here concerned with the condition of the Detroit River and Michigan Waters of Lake Erie. These waters carry both natural and man-made pollutants. Our endeavor is to control the character and amount of man-made pollutants, and to utilize the waste assimilating capacity of the waters as long as this can be done within the stated objectives.

The Board fully realizes that such use of the waters must be compatible with health, industry, agricultural needs and practices, recreation, fish and wildlife, and transportation, all in relationship to the economic and social needs of the people who have chosen to live and work in Southeastern Michigan. In assessing the various uses of the waters we must be realistic and understand that it is not possible to return these waters to their original natural state. The Board has endeavored to determine, in terms of health, industry needs, recreation and other uses, an overall sewerage plan to best meet the needs of the people, their way of life and their manner of employment. We have endeavored to improve our knowledge of interrelationships which require some compromises between the several factors involved. At this time we have only partial understanding of some of these needs and methods of compromise. The Board and the Foundation wish it well understood that they desire to work continuously and cooperatively in the solution of the problems.

The principal difference between the Board's recommendations and the HEW recommendation involves the understanding of conditions in the waters and their use and what should be done or can be done at this time and in the future with improved understanding.

For the Detroit River, the question of character and quantity of man-made pollutants resolves itself to three (3) categories:

1. Overflow from combined sewers;
2. Degree of treatment of municipal waste water;
3. Degree of treatment of industrial waste water.

The Board's position with regard to each of these categories in terms of the HEW Findings is as follows:

Overflow from Combined Sewers:

The Board estimates that the cost to Detroit alone to separate their sewers would be 1.7 billion dollars.

From a practical standpoint, it is both excessively costly and almost physically impossible to separate effectively the existing Detroit combined system serving Detroit and certain surrounding areas.

The Board did recommend the construction of the North Interceptor to remove sewage from Detroit's combined system served by the Detroit River Interceptor. This construction will reduce the estimated 1980 sewage carried during overflow to that from 21 people per acre instead of 52 people per acre, or permit the River Interceptor to provide 1.1 c.f.s. per 1,000 population interception rate. This increased rate, more than double the present, together with storage in the combined system, will improve control of storm water overflows.

It is the Board's judgment that frequently combined overflow spills occasioned by rains of low intensity create a nuisance and every effort should be made to eliminate such spills. Infrequent spills of combined sewage occasioned by high intensity rainfall have little overall persistent effect on the Detroit River.

The HEW Findings indicate that the discharge from both combined and separate storm sewers carry coliform densities ranging in the millions per 100 ml and far exceed the HEW proposed waste water treatment plant effluent standard of less than 5000 organisms per 100 ml. Disinfection of storm water overflow by the use of chlorine was studied by the Board. There are numerous physical and technical problems involved in such a program involving as it does at least 124 points of storm water overflow each of which would require chlorination facilities. At present no significant information is at hand to indicate the need for or overall effectiveness of chlorinating combined storm sewage overflow.

The HEW Findings indicate for the period of test that the Ann Arbor separate storm sewer discharge had higher suspended solid concentrations than the overflow from the Detroit combined sewers. Both systems tested showed phenols, nitrogen and phosphate in the overflow, the concentrations in general being higher in the Detroit System.

The HEW Summary on Page 55 states with regard to overflow from combined sewers "a specific method of approach to the solution of this problem is not now evident".

The Board wishes to call attention to the fact that the Detroit area has made real progress in constructing control measures for storm water overflow, many of which have only recently been completed.

In the Board's judgment, it is not feasible with large existing combined sewer systems to eliminate combined storm sewage overflows. It is possible to obtain information on the frequency, and the duration of combined overflow, together with chemical, physical and bacterial analysis. To relate this information to health, welfare, esthetics and economics is a very difficult task and to date has not been accomplished.

Degree of Treatment of Municipal Waste Water:

The Board has stated that "It has not been established, on the basis of information presently available to the Board, that secondary treatment is indicated at this time for any plants discharging into the St. Clair or Detroit Rivers. This does not preclude the possibility of additional treatment sometime in the future. This contingency, however, should rest on research underway and proposed, diligently pursued to determine what, if any, improved treatment is required".

With reference to the Detroit, Wayne County (Wyandotte, Trenton and Grosse Ile) plants, the HEW Summary recommends that additional facilities be provided to provide a minimum of secondary treatment to reduce effluent suspended solids to 35 mg/l, settleable solids to 5 mg/l, oil to 15 mg/l, BOD to 20 mg/l and bacteria to 5000 organisms per 100 ml.

These results are those obtainable, in general, by the use of the activated sludge treatment method commonly referred to as secondary treatment.

The Detroit plant now serves 2,806,000 people. By 1975 to 1980 it is estimated that the plant will serve 4,000,000 people and by the year 2020 some 5,450,000 people. Considering the year 2020 primary plant additions are estimated to cost $34,000,000 and secondary treatment additions $163,000,000.

For immediate construction to serve 4,000,000 people primary plant additions are estimated to cost $12,000,000 and secondary treatment additions $106,000 000.

In terms of the present average householder who must bear the costs the immediate construction and operation requirements are estimated to be 2.6 times as much per year for secondary treatment as compared to primary treatment.

The Board is fully aware of the present trend toward the concept of providing secondary treatment regardless of the assimilation ability of the receiving stream or of any demonstrable improvement to the health, welfare and economy of the people of the affected area.

George E. Hubbell

With due consideration of this trend, the Board recommended expansion of p"imary treatment facilities with continued study to determine the future course of action.

With reference to bacterial removal, it has been demonstrated that the present average coliform content of 15,000 per 100 ml. in the Detroit effluent can be reduced to an average content of 1000 organisms per 100 ml by the application of additional chlorine over and above the amount now in use. Thus, to provide effluent bacterial control, it is not necessary to go to secondary treatment to meet the proposed HEW standard of 5000 organisms per 100 ml.

With reference to Detroit effluent Biochemical Oxygen Demand and Detroit River Dissolved Oxygen, the Board indicated that with a dissolved oxygen content of 8 ppm in the River above the present Detroit Plant outlet there would, at all times, be not less than 4 ppm dissolved oxygen below the outlet. At the present time, the Detroit Plant effluent is essentially confined to the waters flowing down the Trenton Channel. By 1980, the Board estimates, based on primary treatment an effluent loan of 650,000 lbs. per day with a calculated ratio of DO/BOD of 2.7 in the Trenton Channel based on 8 ppm DO.

Minimum Dissolved Oxygen concentrations, as reported on Page 152 of the HEW Findings, show 9.0 ppm above the Detroit Sewage Plant Outlet and 5 ppm at the outlet of the Detroit River.

On Page 150 of the HEW Findings, it is stated "In no reaches of the Detroit River do levels of dissolved oxygen cause interferences with water uses" and "Future problems may result if oxygen consuming waste loads increase.

On Page 280, of the HEW Findings, "Levels of DO in most of the Michigan waters of Lake Erie are sufficient at this time to prevent interference with water use."

With reference to Detroit River BOD, the HEW Findings on Page 150 indicate upper Detroit River BOD from 2 to 4 mg/l., below the Rouge River 8 mg/l, and at the mouth of the river at Lake Erie 2 to 4 mg/l.

These results indicate that from a BOD standpoint, the Detroit River is discharging the same quality of water into Lake Erie as it receives from Lake St. Clair, and confirms the Board's judgment as to the ability of the river to assimilate primary plant effluent.

George E. Hubbell

The Board has recognized the fact that future BOD loadings on the Detroit River may require limitation of the Detroit Plant effluent BOD. Such limitation may be obtained through intermediate treatment methods other than the HEW Summary recommendations of secondary treatment.

With reference to solids in the effluent, the Board recommended "that solids be so effectively removed that those remaining will not be visible to the eye, and will not create sludge banks in the river or lake".

During the HEW survey of the Detroit Treatment Plant, as shown in Table 8-V, suspended solids removal averaged 39%, settleable solids 52%, and BOD removal 17%. During 1964, the Detroit Treatment Plant averaged 59% removal of suspended solids; 93.6% of settleable solids ad 37.4% of BOD. Thus, actual yearly operating efficiencies were considerably higher than the efficiencies during the HEW test runs.

Removal of solids by sedimentation is to a considerable degree a function of time of settling. During 1964, the average settling time at the Detroit Plant was 0.95 hours. Future conditions may well indicate the necessity of increased sedimentation time to meet the requirements of effluent solid load. The Board's recommendation was based on adequate primary sedimentation with maximum control of floating solids, oil and grease.

During 1964, the Detroit Plant influent contained 1,680,000 lbs. of suspended solids each day. The plant operated at 59 percent efficiency, discharging 690,000 lbs. to the river. These finely divided solids uniformly disbursed in the Trenton Channel flow are equivalent to 3 mg/l.

The HEW Findings on Page 149 indicate the upper Detroit River mid-stream carries from 5 to 10 mg/l suspended solids out of Lake St. Clair with values of 15 to 20 mg/l near the American shore. Assuming a uniform suspended solid concentration of 6 mg/l, the entire Detroit River carries a daily load of 5,850,000 lbs. of suspended solids out of Lake St. Clair.

The Detroit primary effluent contributes about 10% of the present initial suspended solid load passing down the Detroit River. With secondary treatment, this could possibly be reduced to 3% of the initial load in the River. In the Board's judgment, the beneficial effect from making such a reduction in the suspended solid load in the Detroit River on the health and welfare of the people of the area has not been demonstrated.

With reference to cyanide, phenol and ferrous iron in the influent and effluent of the Detroit Treatment Plant, the Board recommended a major effort, through available control ordinances, to keep excessive amounts out of the sewers. In the Board's judgment, source control of these wastes is required.

With reference to eutrophication or aging of lakes because of the addition of nutrients, the Board took the position that it was reluctant to recommend, at this time, secondary treatment for sewage in order to prevent an aging process which will undoubtedly continue in Lake Erie, but whose manifestations are still minor. This reluctance is emphasized furthermore by the fact increased treatment, as now practiced, reduces in no material sense the amounts of phosphorous and nitrogen, the primary causative agents of eutrophication.

On Page 153 of the HEW Findings, this statement occurs - "A commonly accepted level of inorganic nitrogen compounds (nitrates, nitrites, and ammonia) above which undesirable blooms can be expected to occur is 0.03 mg/l." (This is evidently a misprint and should be 0.30 mg/l).

On Page 255 of the HEW Findings, average nitrate-N concentrations in the Upper Detroit River are 0.17 mg/1 and at the river outlet 0.27 mg/1.

On Page 256 of the HEW Findings, average ammonia-N concentrations in the Upper Detroit River are 0.11 mg/1 and at the river outlet 0.33 mg/1.

Thus average inorganic nitrogen concentration leaving Lake St. Clair is 0.28 mg/1, and entering Lake Erie 0.60 mg/1.

On Page 254 of the HEW Findings, average phosphate concentrations in the Upper Detroit River are 0.18 mg/1 and at the river outlet 0.52 mg/1.

It would appear that sufficient nitrogen and phosphate enter the Detroit River from Lake St. Clair to provide for abundant growth of algae in Lake Erie regardless of the inevitable addition of nitrogen and phosphorus from the Detroit Plant effluent.

On Page 11 of the HEW Summary, it states, "The main source of nitrogen to the Detroit River is the effluent of the main Detroit Sewage Treatment Plant." Also, "The main source of phosphates to the Detroit River is the main Detroit Sewage Treatment Plant effluent."

On Page 31 of the HEW Summary it states, "While artificial fertilization of the Michigan Waters of Lake Erie is a severe problem, no recommendations are made at this time concerning the installation of specialized treatment facilities designed to reduce phosphorous and nitrogen compounds in the effluent of municipal waste treatment works. Proper operation of secondary treatment facilities of the activated sludge type will result in significantly greater removal of these constituents than that produced by primary treatment alone."

It is the Board's judgment that the present installation of secondary treatment would not materially reduce the quantity of nitrogen and phosphorous in the Detroit Plant effluent below that now being discharged, and that the construction of secondary treatment facilities at Detroit, at this time, would not significantly reduce the artificial fertilization of the Michigan Waters of Lake Erie.

On Page 35 of the Summary, it states "A Technical Committee appointed by the Conferees will evaluate actual phosphate removal of the secondary treatment plant after it is in operation. On the basis of this evaluation, if further facilities for the removal of phosphates are necessary, the Conferees will consider making such a recommendation. A similar program will be put into effect concerning removal of nitrogen compounds

The Board cannot accept this type of approach as justification for requiring secondary treatment on the basis that perhaps it will solve the problem.

Degree of Treatment of Industrial Waste Water:

Under Michigan Law, the 104 industrial establishments discharging wastes directly into water courses in the Six-County Area are answerable to the Michigan Water Resources Commission.

The Board recognized that while many of the 44 industrial plants discharging industrial waste directly into the Rouge and Detroit River had established waste control, sufficient uncontrolled waste discharges remain as to adversely affect water quality, particularly in the Rouge River.

The Board indicated that continued effort on the part of the Water Resources Commission and the industries should result in the reduction of the existing industrial pollution.

IN SUMMARY:

The Board recommends that for the Detroit Plant, additional primary facilities be provided to meet the 4,000,000 population requirements, and that if improved means of treatment eventuate, and they are definitely in the public interest, they should be incorporated into increased degrees of treatment where applicable in the Six-County Area. The next several years should provide ample time for intensifying the studies required to provide a better understanding of the behavior of the Detroit River and Lake Erie than is now at hand. In this period, laboratory, field, and model studies should be developed to provide clear conceptions of diffusion-dispersion phenomena and the biochemical capacity of the waters to receive and assimilate sewage treated to various degrees of stability. It is only upon the findings of these expanded studies that one would be warranted in suggesting the time at and extent to which additional degrees of treatment, if any, would be required by future conditions.

MR. STEIN: Thank you, Mr. Hubbell.

Are there any comments or questions, Mr. Poston?

MR. POSTON: I note that your report indicates that the benefit from secondary treatment, does not warrant--because of BOD and nitrogen removal, do not provide the benefits. I wonder if you take into account in the benefits from slime growth, of general appearance of the water and use of the water.

MR. HUBBELL: Mr. Poston, it is the Board's judgment that it would not benefit.

MR. POSTON: With regard to secondary treatment and removal of the phosphates, we had testimony, or we heard reports indicating that phosphates are reduced in properly operated secondary-type treatment plants, and you indicate that this wouldn't be the case in the case of Detroit, because there was some--

MR. HUBBELL: We felt that there would not be a significant reduction at the present time with the knowledge available on phosphate removal.

MR. POSTON: You are aware that like plants in Chicago have phosphates in their effluent and they are reduced in the magnitude of fifty per cent?

MR. HUBBELL: Yes, fifty per cent.

MR. POSTON: Are you referring, then, to the removal of phosphates in secondary treatment as contrasted to chemical treatment? Do you think that phosphates in secondary or activated sludge type would not be removed?

MR. HUBBELL: We recommend that continuing studies be made on the development of intermediate processes to determine the benefits that could be arrived at by using such process, and this would include phosphate removal.

MR. POSTON: That is all I have, Mr. Chairman.

MR. STEIN: Mr. Oeming?

MR. OEMING: Yes, I have a couple of questions. These are intended, Mr. Hubbell, to try to clear up in my mind some problems here that I do not interpret correctly, maybe. Do you see any discrepancy in your statements with respect to this combined sewer overflow problem? In your statement, for instance, on page 3 you say, "It is the Board's judgment that frequent combined overflow spills occasioned by rains of lower intensity create a nuisance, and every effort should be made to eliminate the spills." Then you say on page 4, "It is not feasible with large combined systems to eliminate combined sewer overflows. Then you go on to say, "It is a very difficult task." I don't know here whether you are--all of this refers to eliminating or what, about modifying.

MR. HUBBELL: It was my intent--and I am sorry it wasn't more clearly stated--that without any control on a combined system or with a separate storm system, every time it rains over something like .03 inches you get a discharge of storm water; and this can occur numerous times in this area, maybe up to a hundred times a year. It is possible to control--to eliminate the overflow from this small type of rainfall and reduce the number of overflows to perhaps one-third of this amount; and those overflows being attributed to high-intensity rainfalls--and we feel, and the Board felt very strongly that every effort should be made to provide control measures on the combined sewer systems to reduce the frequency of spills.

In fact, that is being done all over the metropolitan area today.

MR. OEMING: You are not against--

MR. HUBBELL: So that I am well understood, I am not against attempting to alleviate discharge of combined sewers, to reduce the amount and the frequency. In fact, I have been working toward that for a good many years.

MR. OEMING: But your reservation is about the complete elimination?

MR. HUBBELL: My reservations is the complete elimination.

MR. OEMING: I see; all right.

Now, Mr. Hubbell, on page 5, you make an exception here to the possibility of additional treatment. You qualify it to the extent that it should rest on research under way and proposed. I wonder if you could be a little more specific as to just what you had in mind in the way of research under way and proposed.

Let us take research under way, first.

MR. HUBBELL: Research under way I believe can refer to all of the research that the Public Health people are doing now on phosphate removal and nitrogen removal and other methods of treatment, and the use of Palmers and perhaps a method of treating sewage that you or I have never even dreamed of to date. We do not know. And I know that there is a tremendous effort and a tremendous amount of money being spent on research to develop increased economical methods of removing nitrogen and that sort of thing, and this is what we meant, as well as the type of thing that Mr. Remus spoke about that they are doing at their own plant there.

I understand at the Wyandotte plant they are in the process of conducting research on the use of Palmers, and to get out material that is not presently being taken out by primary treatment.

MR. OEMING: One more question, Mr. Hubbell: You recommend pretty strongly that the cyanide phenol and ferrous iron in the influent and effluent of the Detroit plant be controlled through available ordinances to keep them out of the sewers. Is it your judgment that there is an effective way that can be relied upon as an effective way to maintain continuing control day-to-day over long periods of time of these substances, as compared with treatment?

MR. HUBBELL: I personally think that it is far more effective to keep them out of the sewer than it is to put these things in 500 million gallons of water and then try to get them out at the sewage plant, and I believe that the various municipalities do have adequate ordinances and that they can be enforced, and I mean enforced without undue hardship on industry.

I think Mr. Remus has made an excellent statement of the approach that is going to be taken by the City with regard to this.

MR. OEMING: I am just asking for your experience, whether this is the best way to approach this problem, or how do you view it?

MR. HUBBELL: Personally I think it is the best way. I think that the discharges from industry should meet ordinances and should be controlled into a public sewer system.

MR. OEMING: Thank you, Mr. Hubbell; that is all the questions that I have.

MR. STEIN: Mr. Hubbell, in your summary statement you indicate that it is the Board's decision that this is what they should do in the next several years, rather than the recommendations made in the Federal report that what should be done is intensified studies made to give us a better understanding of what happens in the Detroit River and Lake Erie; isn't that right, that that probably--

MR. HUBBELL: I didn't understand your question. I don't think I quite understood that.

MR. STEIN: Here, as I understand it, you say the next several years should provide ample time for intensifying the studies required to provide a better understanding of the behavior of the Detroit River and Lake Erie than it now has. That is, the State and

Federal agencies would be well advised in the next several years possibly to concentrate on intensified studies.

MR. HUBBELL: It is my understanding that this is going to be done.

MR. STEIN: Yes; but this is your recommendation?

MR. HUBBELL: Yes.

MR. STEIN: Well, now, the point is that the things to look for in the study is the question of how wastes can be diffused and dispersed and the capacity of the water to receive and assimilate it; right?

MR. HUBBELL: We felt this way, and I appreciate--this is a philosophy--

MR. STEIN: That is right. I shall say that, Mr. Hubbell, and I appreciate your point of view, and this is a philosophy. As you know, the Federal law has considered that in a Statement of Purpose on this, and I will say that as far as I know, this was reminiscednt to me of the reports I used to read when I first started in the business.

I think this is a philosophy that has been maintained by many people; but there possibly these days might be a slightly different philosophy, and I think there can be an accommodation.

Are there any further comments or questions that you have?

Thank you very much for a very helpful comment.

MR. HUBBELL: Thank you very much.

MR. STEIN: Mr. Remus has asked to make a short statement, if we may have him.

MR. REMUS: Mr. Coleman raised a question about the difference between burned solids and the total solids that we took out of the sewage plant. The difference was that hauled away, that was in our ash; and I would like also to hold our report open for a couple of minor corrections we would like to make in it, and if anything develops in the analysis of that which we are not now aware of, I believe it was indicated we would have a week open; is that correct?

MR. STEIN: Yes. Pardon me, do you have any objection?

MR. OEMING: I have no objection.

I just want to know, Mr. Remus, do they apply to the general issues that you raised, or have they to do with data, itself?

MR. REMUS: No; it is some of the statements that are made in the report. If you read them, they are not very explanatory and then there is one figure that I want to recheck.

MR. OEMING: That is all right. I just wanted to know.

MR. STEIN: Yes; this will be open, and we shall do that.

Do you have anything else?

MR. REMUS: That is all.

MR. STEIN: Thank you very much, Mr. Remus.

MR. OEMING: Mr. Chairman, at this time I would like to provide the City of Wyandotte an opportunity to present a statement. I believe this is to be made by Mr. George Hazey.

STATEMENT OF

GEORGE J. HAZEY, GENERAL MANAGER

CITY OF WYANDOTTE

DEPARTMENT OF MUNICIPAL SERVICE

WYANDOTTE, MICHIGAN

MR. HAZEY: The Federal Report, as a result of a two year Federal-State investigation of water pollution in the Detroit River - Lake Erie Area, presents both general and specific recommendations for abating water pollution in these waters.

As these recommendations are reviewed, it is interesting to observe that they include several important items to assure a proper program of pollution control. They are:

1. Requiring wastes to be of a given concentration in the effluent prior to discharge.

2. A regular program of monitoring these waters.

3. The establishment of a Public Health Service Pollution Control Surveillance station in the lower section of the Detroit River.

The City of Wyandotte uses the waters of the Detroit River as the source of its public water supply. In 1950 a new raw water intake line was constructed and the crib located in a zone of acceptable water quality. Since there are no recognized standards of quality, nor effective pollution control measures, specifically for the protection of raw water quality at intakes this source began to deteriorate in 1953.

Daily plant operating records and the findings of the Public Health Service survey establish present day water quality.

Since 1948 our water plant has been operating with a free chlorine residual in the finished water. High and varying ammonia concentrations interfere with this practice, requiring higher chlorine dosages which increases treatment costs.

Phenols require expensive treatment procedures to effect their complete removal. When phenols and ammonia are present at the same time and each vary in concentration, treatment procedures cannot always insure a palatable water.

When consumers receive water with the characteristic medicinal taste and odor, complaints are in order, and often doubts are expressed as to the safety of their supply. The cost of these treatment procedures should not be borne by the customer.

Phenols and ammonias should be reduced to their lowest possible concentration before discharge into the receiving stream.

In the 1951 report of the International Joint Commission on the Pollution of Boundary Waters, it was recommended that in the treatment of municipal wastes, that, a program of more efficient or secondary treatment be inaugurated at as early a date as possible; and that a median coliform M.P.N. value not exceeding 2400 per 100 ml., be considered as the objective for bacterial control to attain reasonable stream sanitation.

Our plant records indicate that for the past 53 months the median M.P.N. value of 2400 per 100 ml. was attaind only 39.6% of the time at our intake source!

While water purification processes have made notable advances over the past few years, there is no reason why these processes should have the added responsibility of waste treatment. It is time that standards for the quality of waste waters was established and enforced to protect all water uses.

We respectfully request this Conference to review the findings of the survey, and then consider the recommendations of the Federal Report, and further, to accept them in the interest of protecting present uses as well as those of the future.

Our abundance of fresh water is a gift of God. The Detroit River should be a thing of beauty, a priceless recreation and industrial facility. It is our duty to protect it for all citizens rather than for those who would use it and then pollute it to such a state that it is unfit for others to use and enjoy.

Thank you for the courtesy of appearing before this Conference.

MR. STEIN: Thank you, Mr. Hazey. Are there any comments or questions?

MR. POSTON: You comment about the per cent of time that the coliform met the Joint Commission recommendations. I wondered whether you have any observation as to the trend in this water quality. Has it improved, stayed the same, or is it better since this study started in 1962?

MR. HAZEY: In 1962, the last nine months of that year there was an average of about a 44 per cent reduction when compared to the same periods the previous year in 1961.

The first two months of 1963 there was a 66 per cent reduction, but the trend has gone the other way since that time.

MR. POSTON: In other words, there was an improvement, and then it dropped off?

MR. HAZEY: Yes.

MR. STEIN: Mr. Hazey, I note by the map that Wyandotte is below Detroit. Is your water intake below the water intake for Detroit?

MR. HAZEY: That is correct.

MR. STEIN: Do you have it, for the national position, at least, the choise that Mr. Remus indicated, Detroit might have gone above or below--you did not think you could get your water intake much above its discharge point, or do you?

MR. HAZEY: To get our intake above this point?

MR. STEIN: Yes. You do not think that would be equally feasible for your city?

MR. HAZEY: That's right; it would be a pretty costly expenditure, that is true.

MR. STEIN: But the point that I see on the map is very clear, that while Detroit may have the option, as Mr. Remus has pointed out, on the water intake above and below, it is pretty hard for a smaller community like Wyandotte to place its water intake and have it equally feasible to be anywhere but below the Detroit waste discharge?

MR. HAZEY: That's right. Our intake, when they established the filtration was back in 1918 and it has been in that position since then.

MR. STEIN: There has been some suggestion about putting the discharge point at another place. How come you have kept it there?

MR. HAZEY: I didn't get your question.

MR. STEIN: There has been some question

raised about the possibility of your moving that point of intake. Why do you keep it where you are keeping it?

MR. HAZEY: It was originally suggested that we go into Canadian waters because the waters on the other side of the international boundary were of better quality, but the permit that was granted by the Canadian Government is simply a permit for the installation of a structure--period--and to install any facility on the Canadian side we would have no insurance as to the quality of the water being maintained at the same quality at the time you might put the structure in there.

MR. STEIN: Thank you.

MR. OEMING: Mr. Hazey, I have one question here--it may be a question, and it may be an attempt to rectify what might be a misunderstanding on your part. At the bottom of page 2 you refer to the recommendations of the International Joint Commission; and I wonder if you have checked this with the actual recommendations of the International Joint Commission.

MR. HAZEY: In reference to what?

MR. OEMING: With respect to this program of secondary treatment at as early a date as possible. Are you certain that this is correct?

MR. HAZEY: Well, I would have to check. I may have read a different portion.

MR. OEMING: Could I help you out?

MR. HAZEY: Yes, fine.

MR. OEMING: This, Mr. Chairman, is the report of the International Joint Commission, Washington-Ottawa, 1950, as adopted by the two governments, U. S. and Canada.

I am asking Mr. Hazey to read the answer to question 4 which was posed to the International Joint Commission, and the answer given by the Commission to this question.

MR. HAZEY: "Treatment of municipal wastes by sedimentation and disinfection of the effluent is urgently needed and should be undertaken as an initial step by all municipalities where all phases are not afforded such primary treatment.

"This should be followed by a more efficient or secondary treatment where necessary in order to meet the requirements of the objectives."

MR. STEIN: Isn't that what he said here?

MR. OEMING: No, he did not.

MR. STEIN: He said "a program of more efficient or secondary treatment" on page 2.

MR. OEMING: That is different. I think

the record is all right. Just leave it set.

MR. STEIN: O. K. Are there any further questions?

MR. POSTON: I wondered, Mr. Hazey, whether you received in the last year any notification of water quality changes, of the quality of waters that was coming down to your intake prior to their reaching your intake.

MR. HAZEY: I am not aware of any. From what source?

MR. POSTON: Well, any source.

MR. HAZEY: No, I am not aware of any. If I interpret your question correctly, Mr. Poston, it is, is anyone advising us of a possible change in water quality?

MR. POSTON: Right.

MR. HAZEY: I am most certainly not aware of any.

MR. POSTON: I think that is all.

MR. STEIN: While we are waiting, I would like the record to show here the problem that we are faced with in these philosophies, that the conferees are faced with, with Mr. Hazey and Mr. Hubbell coming up. Mr. Hazey is downstream talking about wanting to improve water quality as soon as possible, because it is his business to try to treat a water supply and protect the people he is serving; and the question here of Mr. Hubbell's philosophy is to study and try to find out the capacity of the stream to receive and assimilate sewage.

Now, the question here is to try to get an accommodation, and you can see we have to have in mind, respecting both philosophies, is how the operator of the water works is going to feel seeing this water every day while we go around surveying the assimilative capacity of this water to stabilize sewage; and I think right with these two statements you can very well see the real acute problem that faces us in this field and faces the conferees.

Mr. Oeming?

MR. OEMING: I would like to pursue Mr. Poston's question and Mr. Hazey's answer a little about this notification business. Do you mean to say, Mr. Hazey, that you know of no case where the State or the other State agencies do not notify you when they know of something that might have happened above, that would affect your intake?

MR. HAZEY: I may have misinterpreted Mr. Poston's question. I am simply trying to recall, but

I am not aware at the present time. I might clarify this question by saying that in my present position of general manager of Municipal Service, I have someone else presently at the water plant, and I may have not exactly checked the records. I was thinking in terms solely of a few instances where something has occurred and we were not notified.

MR. OEMING: But this isn't--

MR. HAZEY: I cannot say right now one hundred per cent of the time, if I may clarify it.

MR. OEMING: But a notice might have gotten to your plant superintendent?

MR. HAZEY: This is possible.

MR. OEMING: Instead of you?

MR. HAZEY: This is possible.

MR. OEMING: All right.

MR. STEIN: Are there any further comments or questions?

MR. POSTON: No.

MR. STEIN: If not, thank you very much, Mr. Hazey, for an illuminating statement and looking at this from a little different point of view.

MR. HAZEY: Thank you.

MR. OEMING: I have one more statement,

Mr. Chairman, this morning by Grassy Isle Township, and I believe Mr. Merle E. Solomon, Supervisor, has a statement to make. Is Merle Solomon present?

(No response.)

MR. STEIN: I guess not.

MR. OEMING: Mr. Chairman, with respect-- this concludes the notices I have received from municipalities and governmental units who responded to my invitation to present statements at this conference. If there are any others that want to make a statement, I am not aware of it.

I notified them all by letter and invited them to make statements, and this is the time for the Detroit area municipalities and governmental units to make their statements.

(No response.)

MR. STEIN: If not?

MR. OEMING: There are none.

MR. STEIN: The rest of the program, I understand, of statements, will be industrial statements; is that correct, sir?

MR. OEMING: That is correct.

MR. STEIN: We shall stand recessed until 1:40 p. m.

(Whereupon at 12:10 p. m. a recess was taken for luncheon.)

AFTERNOON SESSION

MR. STEIN: May we reconvene. Mr. Oeming?

MR. OEMING: Mr. Chairman and Mr. Poston, before starting with the appearances for this afternoon I would like to make an announcement. I have had many requests for copies of the PHS report, copies of the State report, and some requests for the transcript of the previous conference proceedings in 1962. We have some copies of each of these reports with us, and I would like to refer your requests to the employees of the Water Resources Commission who are here.

Mrs. Struhsaker, would you stand, please, so people will know whom to contact, and Mrs. Frost. They will try to service your requests, and if they cannot service them, they will take your names and mail you your requests.

Now, Mr. Chairman, in opening the session this afternoon I would like to provide the opportunity, first of all, for the statement to be presented on behalf of the Michigan State Chamber of Commerce by Mr. Gene Little.

Mr. Little.

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STATEMENT OF GENE LITTLE,
MANAGER OF NEWS AND INFORMATION,
MICHIGAN STATE CHAMBER OF COMMERCE

MR. LITTLE: Mr. Chairman and members of the Commission, gentlemen, and ladies:

I am here in the role as a substitute this afternoon for Mr. Harry R. Hall, the executive vice-president of the Michigan State Chamber of Commerce, and with your permission I will read his statement at this time.

MR. STEIN: Would you identify yourself?

MR. LITTLE: Pardon me. My name is Gene Little, and I am manager of news and information for the Michigan State Chamber of Commerce.

I want to be as positive as I can in stating that the Michigan State Chamber of Commerce does not favor pollution. In fact, the records will show that our Water Resources Committee, and our policy making board of directors have frequently urged more action in this field and have been active in seeking a state-wide water use policy that would offer more positive controls [illegible] use of this vital resource.

Gene Little

Our concern here today, however, is with the public statements that have minimized the extensive and productive efforts on the part of industry in general to improve disposal facilities leading to the diminution of pollution in all of our waters, and particularly the Detroit River. We are sincerely concerned about the reports that over-simplify the problem and stigmatize industry without giving any credit or consideration for the costly work that has been progressing in almost every industry involved on the Detroit River.

At a later date the Michigan State Chamber of Commerce hopes to document this progress with facts and figures that will refute further the now discredited idea that industry cares nothing, whatsoever, about the pollution problem, and is merely interested in disposing of waste matter in complete disregard of the public interest.

To make our position clear, I would like to refer you to a policy that was approved in January of 1963 by the Board of Directors of the Michigan State Chamber of Commerce. In that policy statement we called for a clear-cut policy on a state level that would provide for a general over-all program that would "provide aetive and sympathetic guidance and coordination of water resource management and development to the end that all beneficial water needs may be most fully and permanently met."

In a later policy on water pollution, adopted in December of 1963, we stated the following:

"The Michigan State Chamber of Commerce believes:

1. That the discharge of pollutional wastes into the waterways of the State should be controlled.

2. That while the primary objective of pollution control must be the protection of the public health, other objectives add impelling reasons for protecting the State's water resources, such as the need for the use and reuse of surface waters and ground waters which receive and dilute the liquid wastes.

3. That decisions on the type and degree of treatment and control of wastes and the disposal and utilization of adequately treated waste water, must be based on thorough consideration of all the technical, economic, and related factors involved in each portion of each drainage basin.

4. That the public must be made fully aware of the hazards of pollution and of the workable means for control, so that it will sponsor and support construction and proper operation of all necessary

facilities.

5. That industry shall recognize and accept its responsibilities for the proper treatment and control of its wastes.

6. That local units of government should install and operate adequate facilities.

7. That the State of Michigan must be responsible for the administration of adequate State and Interstate (not Federal) pollution control programs, which must be supported by increased budgets, and adequately staffed by well-trained and compensated engineers, scientists, and other personnel and that the administration of pollution control be firm, effective, and equitable."

The question under discussion here today seems to be "Are we winning the pollution battle on the Detroit River?"

Almost everyone has a different definition of the word "pollution." To some, water is polluted if it is anything but pristine pure. To others it is polluted only if it exceeds certain criteria as established by law.

Some place in between these two extremes, there is room for a flexible, workable program that would utilize the waters of Michigan in the best interests of the five main areas of concern -- industry, municipalities, agriculture, and recreation and wildlife.

To meet the needs of these areas of interest, Michigan must be assured of safe, pure and adequate supplies for the home, factory, and farm; streamflows sufficient to assimilate municipal and industrial wastes while maintaining suitable habitat for fish and wildfowl; stable levels and quality suitable for body-contact recreation; the protection of our cities and farms from floods, and our land and beaches from erosion.

For the past fifteen years Michigan has moved steadily forward in all of these areas of endeavor. However, disagreements exist as to how effective our program in Michigan has been. To the sportsman and the fisherman, any waste disposal to our water courses is a matter of concern. To the industrialist and to local governments, the stream is an indispensable vehicle to assimilate and remove waste effluents.

But to the Water Resources Commission, the objective must be one of assuring all interests with water of the quality required for their various competing uses, within the framework of reasonableness as provided by Michigan Law.

Neither the Commission, nor industry, nor any governmental body, can wave a magic wand and expect troubled waters to be corrected. It takes long years of study, as evidenced by the report under discussion today which took two years to compile, and to identify the proper restrictions necessary for any given waste disposal. It takes technical know-how, time, and money, to put in operation the complex facilities required to comply with these restrictions.

The Michigan program is recognized across the nation as one of the most effective. It has been held up as a model program, as evidenced in the last year's hearings before the Committee on Public Works of the House of Representatives.

MR. STEIN: Did you want that--

MR. LITTLE: Did I skip a sentence there?

MR. STEIN: There was a sentence in your statement which said "Most of Michigan's chronic pollution cases have been solved, or are at this moment being solved." Do you want that stricken?

MR. LITTLE: No.

Most of Michigan's chronic pollution cases have been solved or are at this moment being solved.

The Michigan program is recognized across the nation as one of the most effective. It has been held up as a model program, as evidenced in the last year's hearings before the Committee on Public Works of the House of Representatives.

Former Representative Harold Ryan said that "Michigan has assumed the highest place of all fifty States in the nation of eliminating and reducing pollution in the streams of the State of Michigan."

Representative John A. Blatnik, in his remarks said this: "I will say this for the record: If all States were doing the job that your State of Michigan is doing, and has been doing, we would not have any matter of standards coming up before us."

It is ironic then that we should be meeting here today as one of the first States to undergo such a thorough and exhaustive study as evidenced in the report now under discussion.

So, let us look at some recent facts that have been published both in the report and in Water Resources reports that indicate tremendous progress in pollution control.

The 1964 status report of the Michigan Water

Resources Commission indicates that 316 out of 488 industrial and commercial establishments received an "A" rating; and 120 firms were reported to receive a "B" rating.

During the past few years, 38 out of 42 industries on the Detroit River met certain objectives laid out by the Water Resources Commission to abate pollution.

While the PHS report mentions the downward trend in major pollutants in recent years by simply saying they have been reduced by more than 50 per cent, actual figures show the following downward trend in major pollutants:

Oils	down 80%
Phenol	down 78%
Cyanides	down 71%
Ammonia	down 47%
Suspended solids	down 63%

The Public Health Service report also offers some pertinent statements which indicate a downward trend. But strangely these have not been found in any publicity:

> Samples during the past four years indicate a pronounced downward trend in coliform densities, especially during the years 1962 and 1963.

Gene Little

> These records indicate a substantial reduction in monthly geometric mean coliform densities during 1962 and 1963.
>
> Monthly geometric mean values in several Detroit River sewage treatment plant effluents indicate substantial reduction during the past few years.
>
> Although these concentrations (Phenol) are not yet significant enough to cause major interference with water use . . .
>
> While present oxygen levels in the lake (Erie) do not yet cause major interference with water use . . .
>
> There is no evidence of damage to Lake Erie water use by phenols at this time.
>
> While present levels (chlorides) do not interfere with water use, the year by year increase at the Monroe Water intake is noted as a warning.

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These statements indicate that our progress is being recognized by the Federal Government, and by others that are familiar with the changing patterns of industrial and suburban growth.

Gene Little

Complete objectivity is indispensable in developing and administering so vital a resource as our water. We cannot afford to set policies and promulgate programs that would benefit one special group to the exclusion of others. Failure to see the whole picture can lead to serious conflict and injury and may greatly limit the future utilization of this great natural resource.

To listen to the alarmist who says that we are being overwhelmed by our own filth is just as bad as listening to those who say there is no pollution. We must be realistic in our approach and focus public attention upon a realistic and meaningful objective of providing reasonable use for all interests.

The Michigan State Chamber of Commerce is firmly convinced that pollution control in the future, as it has in the past, will continue to improve as our sustained investment in time and money in research and facilities continue to bear fruit.

We believe that pollution control should proceed as a partnership program, with the Federal Government serving as one of the coordinating and guiding partners, rather than dictating standards that would, without question, determine the location and growth of our industries and our cities.

Thank you very much.

MR. STEIN: Thank you. Are there any comments or questions, Mr. Poston?

MR. POSTON: No, I think not.

MR. STEIN: Mr. Oeming?

MR. OEMING: I have none.

MR. STEIN: Mr. Little, I have one or two I would like explained.

MR. LITTLE: Yes.

MR. STEIN: On the first page of your statement you say "We are sincerely concerned with the reports that over-simplify the problem."

I wonder if you could specify the report you are referring to. Do you mean the 350-page report here (indicating), this report of Mr. Remus, or the exhaustive State report--and let me give you the whole thing at once--or your other question when you worry about reports over-simplifying the problem, on page 4 of your statement you say "It is ironic then that we should be meeting here today as one of the first states to undergo such a thorough and exhaustive study as evidenced in the report now under discussion."

Which report are you talking about?

MR. LITTLE: I think Mr.Hall is referring to the publicity that has been generated.

MR. STEIN: Which publicity?

MR. LITTLE: In all the newspapers, radio, television, and so on.

MR. STEIN: Do you have any specifics? Do you mean the newspapers and the television are over-simplifying the problem; is that your view?

MR. LITTLE: No. They are over-simplifying, I think, the role of industry in solving their problems. This is--

MR. STEIN: You are saying that newspapers and television are oversimplifying the role of industry in solving the problem?

MR. LITTLE: This is Mr. Hall's statement.

MR. STEIN: Thank you.

Mr. Oeming?

MR. OEMING: Next, Mr. Chairman, I would like to provide the opportunity for Mr. James D. Ogden to present a statement. I believe he is accompanied by Miss Olga Madar.

STATEMENT OF JAMES D. OGDEN,
ADMINISTRATIVE ASSISTANT TO WALTER P. REUTHER,
INTERNATIONAL UNION, UNITED AUTOMOBILE WORKERS

MR. OGDEN: Thank you, Mr. Chairman.

My name is James D. Ogden. I am administrative assistant to Walter P. Reuther, President of the United Auto Workers union.

I want to thank your committee for this opportunity to make our presentation on the total subject of pollution in the Detroit River-Lake Erie complex.

Our report and our presentation will go to the basic points that all sectors, both private and public, have a responsibility in the area of meeting the problem of water pollution in the greater metropolitan area.

We are particularly concerned with the responsibility of city government, State government, as well as Federal Government. We were heartened by the presentation by the Honorable Governor Romney, as well as the Honorable Governor Rhodes of the State of Ohio. We would call to their attention and respectfully suggest that in both instances and in both States that they view the program of Governor Nelson Rockefeller in the State of New York. Now, as I understand it, Governor Rockefeller's program has not had money appropriated, and no basic progress has begun, but at least his program--the time is now--points up the problem of water pollution, puts the State of New York on record as recognizing the problem and suggests some possible solution.

This past month Miss Madar and myself had the pleasure of joining a boat trip on the lower echelons of the Detroit River and up through the Rouge River. That boat trip disclosed to us graphically some of the sources of pollution of the Detroit River, and we would suggest that those industries that are situated along the Detroit and Rouge Rivers, as well as the City of Detroit, and the outflow problem from the City of Detroit sewage system all have to be dealt with dramatically if we are going to meet the problem of pollution in the Detroit River and Lake Erie.

As an addendum to our presentation here today--and we shall have copies of this for all of you, we have a booklet entitled "In Pursuit of Greatness," which is a reproduction of President Johnson's message on natural beauty, and I would particularly call your attention to the introductory remarks by Mr. Reuther, which go to the basic philosophy of our organization as it applies to the subject of pollution.

Mr. Chairman, at this time, I would like to introduce Miss Olga Madar, who will make the presentation on behalf of the U. A. W.

Thank you very much.

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STATEMENT OF OLGA MADAR

INTERNATIONAL UNION, UNITED AUTOMOBILE WORKERS

MISS MADAR: Mr. Chairman, conferees, and guests: As Mr. Ogden has said, I am here as a representative of the UAW, and at the request of Mr. Walter Reuther, President of the United Auto Workers of America.

The UAW has approximately 350,000 members in the area surrounding the Detroit River and Lake Erie. In our activities we have attempted to provide energetic and purposeful leadership in all aspects of the community life, outside as well as inside the auto plants.

For many years the UAW has lent its weight to campaigns for neighborhood conservation, urban renewal, beautification of the city and country, and restoration of water resources. We have urged planning for the future, for the increased demands that will inevitably be placed on our recreational resources by an area population projected to reach 5½ million by 1980. We have recognized that the pollution of our waters, expecially the Michigan waters of Lake Erie, is growing, not lessening. Our 350,000 area members represent nearly 350,000 families, each eager to preserve and expand opportunities for swimming, fishing, and boating. Accordingly, we welcomed the cooperation of the Michigan Water Resources Commission and the U. S. Department of Health, Education, and Welfare in the battle against pollution.

This cooperative effort began on the most sold scientific basis that could be asked: a two-and-a-half year, $750,000 study project. A staff of about 30, with headquarters at the Naval Air Station at Grosse Ile, spent nearly two years studying the River, the Lake, and the wastes pouring into them. Their final report is staggeringly thorough, detailed, and precise. The study project was concluded with the presentation of conclusions and recommendations, each of them fully explained and justified by the scientific findings. I think I can speak for the UAW when I say that we find the report completely convincing.

We in the UAW feel a special responsibility for leadership in abating pollution which originates in automobile plants or associated industries. But we represent citizens of this area as well as auto workers, and the Public Health Service report prepared for this conference indicates, beyond the possibility of any doubt, that several of our municipal installations also add pollution to these waters. There have been some newspaper stories and statements by individuals which interpret this report as an insult and an affront to Detroit and its municipal government. Such an interpretation is at best a disappointing response to a growing nation-wide concern with protecting water resources, and at worst a cynical tactic to avoid taking the necessary remedial action.

The Chairman of this conference has emphasized that this is not an adversary proceeding. No one is being indicted here, and no orders will be issued. The Public Health Service study and recommendations were made, at Federal expense, at the request of John Swainson, the former Governor of Michigan.

The conferees and other participants here today are being given an opportunity to discuss these recommendations, to offer new ones, and amend the old ones, and to debate means of abating pollution. To whatever program of action the conferees adopt that will stop pollution in the Detroit River - Lake Erie complex, the UAW pledges its full support.

Critics of the Public Health Service report have expressed puzzlement that Detroit's existing sewage treatment plant, once considered ultra-modern, should now be termed inadequate. There should be nothing puzzling about this. Detroit's population has multiplied six times since 1910. Its industry has grown accordingly, and so, naturally, have its waste discharges. Detroit's supply of water always has and always will remain exactly the same. It should be obvious that, if we discharge increased amounts of wastes into the same quantity of water, more advanced treatment will be required.

The urgent problem of the pollution of Lake Erie presents a separate, equally important reason for the installation of further treatment facilities by the municipalities of the Detroit area. The particular pollution problem in Lake Erie--aging--is not new. It is a problem in which recent technological advances have added to our understanding. We know now that Lake Erie changes every year, becoming more and more like a bog and less and less like a clear lake. We know now the causes of this aging process, and what we can do to slow it down. If nothing else works, certain types of chemical treatment may render wastes less damaging to the lake. The Public Health Service recommendation for secondary treatment is, in fact, the minimum and the least expensive means of improving water quality in the Lake.

And I would think it safe to suggest that the most expensive waste treatment that could be designed could not begin to reach the value of Lake Erie merely for industrial and navigation purposes. The recreation value, present and potential, of Lake Erie is beyond all dollar estimates.

The recommendations for further waste treatment in Detroit are in no way a condemnation of the excellent work done until this time by our public water and sewer departments. No more do the recommendations for industrial waste treatment represent a condemnation of Detroit's industries. Many of these plants have exercised initiative and public spirit in providing waste reductions, particularly in new plants.

Incidentally, may I just state, personally, that after my trip in the Detroit River, and particularly in the Rouge River, I have been contemplating buying a new car this year, and I have been looking at many of them, and I have come to the conclusion that the engineering detail and the styling are equally in all cars quite good, and it is a question of personal taste;

and if I do this on the basis of personal taste now, however, in regard to my concern about water pollution, I have a pretty good idea of what car I will not buy. Now, that is on my own that I make this comment. I will go back to the testimony (laughter).

May I repeat: Many of these plants have exercised initiative and public spirit in providing waste reductions, particularly in new plants. If various interested groups, government and private, now find that both municipal and industrial polluters require some prodding to accelerate their construction of treatment facilities they should not be surprised. Nor should they be alarmed if some of those establishments asked to make expenditures for treatment facilities do a bit of protesting. It would be a poor businessman who was too anxious to spend his stockholders' money. Similarly, few cautious city officials are eager to commit city funds to new construction without the clearly expressed support of the voters.

That support is almost universal in Detroit. We in the UAW will do our best to see that it is expressed not only here but also in Ohio and Canada. We hope that many other groups of private citizens will join us in making explicit to city and industry officials alike our pleas--no, our demands--for clean water in the Detroit River and Lake Erie.

To achieve this, we endorse:

(1) The concept of "stream renewal" urged by a panel at the recent White House Conference on Natural Beauty which would establish a national goal of water beautification similar in scope to urban renewal.

(2) A minimum requirement of secondary treatment in Detroit as well as other municipalities, unless it is demonstrated, without doubt, that less treatment will suffice.

(3) Effective local, state and Federal action to require industry to install adequate systems to avoid water pollution.

(4) Designation by the Federal Government of the Detroit River - Lake Erie complex as a model demonstration area where every known and accepted waste treatment technology would be used.

(5) Establishment of a national policy which would require industry to provide satisfactory methods of treating waste products resulting from the production of new products.

(6) Increased federal grants to encourage area-wide pollution control projects.

We call upon the Governors of Ohio and Michigan and the Mayors of Cleveland and Detroit to provide the leadership in soliciting the support of President Lyndon B. Johnson, appropriate Federal agencies, and the involved industries in achiving these objectives. We pledge the fullest support of the UAW.

Attached is a copy of President Johnson's Message on Natural Beauty, with a foreword by Walter P. Reuther, President of the UAW. This brochure is published and distributed by the UAW Recreation Department as a public service.

Mr. Chairman, I thank you for this opportunity to present this testimony on behalf of UAW.

MR. STEIN: Thank you. Do you have any comments or questions?

MR. POSTON: I would like to ask Miss Madar--I know of Walter Reuther's interest in pollution, having been up there, requested to appear in a meeting. I am wondering, though, what is the local unit of your United Auto Workers, what do they report in on the matter of water pollution and water quality in the Detroit area?

MISS MADAR: When you talk about the local units, you mean the local unions?

MR. POSTON: Right.

MISS MADAR: We have many of our membership who are vitally concerned about the pollution of the Detroit River, and as you would gather, being citizens of their community, first, they are boaters, they are fishermen; they are concerned, therefore, about the pollution in the Detroit River, and have indicated their concern to us.

This is in addition to Mr. Reuther's personal interest. He, of course, is concerned about the membership and their desires, and we have long had a national policy in terms of doing whatever we could to retain and to improve the waters.

Does that answer your question?

MR. POSTON: Yes.

MISS MADAR: We have good response, let me say. Our position on this one is a very popular position with our membership.

MR. POSTON: Thank you.

MR. STEIN: Do you have any questions, Mr. Oeming?

MR. OEMING: I do not have any. I think this is a very elucidating report, Miss Madar. Thank you very much.

MISS MADAR: Thank you.

MR. STEIN: Miss Madar, I have just a question of clarification. I think I follow all your points, but I would like to call particular attention to your fourth recommendation.

You say "Designation by the Federal Government of the Detroit River-Lake Erie complex as a model demonstration area where every known and accepted waste treatment technology would be used."

This is fine, except I have had, maybe you know, some bad experience in Federal administration in dealing with demonstration areas, and obviously one of the things we like in a demonstration area is that the people in the area and the industry be ready and willing to accept the demonstration.

Now, if there were recommendations made about secondary treatment or certain requirements, I understand, at least from some people here in a County report, it is indicated that we have to study the River further and find out what the River can absorb, and everything is going along fine.

I am not sure from listening to the City and reading the report what they are supposed to do there.

For example, we have another large city, Chicago, where they have secondary treatment. They have employed the latest methods to get rid of their sludge. At the latest conference they pledged to insure full industrial treatment of all the industries within their jurisdiction, and that they are obtaining funds to chlorinate their effluent on a year-round basis, and that is with secondary treatment.

It would seem if we had to choose between cities for a demonstration--and we welcome your suggestion as valuable--but I think the people of Detroit in this area have to meet this part way to be eligible for a demonstration.

MISS MADAR: Mr. Stein, I agree with you completely on this, and the comcept here is based on indicating to the general population a prototype of what can be done and that this not necessarily be confined to just one area, but scattered throughout the U. S.; so that in terms of the encouragement we now have from the population about concern in this regard, this will give them some demonstrations of what is achievable if concerted effort is made.

However, in regard to your point, as I said, I agreed completely and I am really hopeful that this is the approach that will be used for instance in the City of Detroit, because it is the same kind of approach in which we have had much experience in terms of getting Federal assistance in urban renewal, in poverty programs, and in many other kinds of projects.

We cannot adopt practices which in effect are contrary to what are enunciated, for instance, in the President's message on natural beauty. If we expect to have cooperation from the Federal Government then we must do the things here to encourage and get additional support from the Federal Government.

MR. STEIN: That is good. Miss Madar, we would be delighted to come in here with our technical assistance, financial assistance, and demonstration programs, but in order to do that, as you point out, we need the cooperation from you. I do not doubt it very well may be effective. I think the problem coming in here wearing our enforcement hats, forcing our way in with a shoehorn indicates there is a different attitude in the approach in the locality. In all demonstrations we must have a response from the locality involved , wishing that demonstration and wishing the work to be done. We stand ready to cooperate wherever we see grounds to do so.

MISS MADAR: Thank you.

MR. STEIN: Thank you.

Mr. Oeming?

MR. OEMING: Mr. Chairman, Mr. Poston, I would like the opportunity at this time for the Great Lakes Steel Corporation to present a statement. I am not sure who the spokesman is going to be. I will leave it up to him to introduce himself.

STATEMENT OF FRED E. TUCKER
COORDINATOR OF INDUSTRIAL HEALTH ENGINEERING
NATIONAL STEEL CORPORATION
FOR
GREAT LAKES STEEL CORPORATION

MR. TUCKER: Mr. Chairman, Conferees, Ladies and Gentlemen:

My name is Fred E. Tucker. I am the Coordinator of Industrial Health Engineering for National Steel Corporation having primary responsibility for matters involving air and stream pollution control at National Steel. Great Lakes Steel Corporation is a division of National Steel Corporation and I appear before you today to make a statement concerning the facilities operated by Great Lakes Steel Corporation as listed in the Public Health Service Report on Pollution of The Detroit River, Michigan Waters of Lake Erie, and Their Tributaries.

I would like first to take this opportunity to compliment the Public Health Service personnel who participated in the Detroit River-Lake Erie Project. The data presented in the "Findings" section of the

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"Report On Pollution of the Detroit River, Michigan Waters of Lake Erie, and Their Tributaries" is an excellent comprehensive study of water conditions, uses, and needs of this important watercourse. I am sure that the information contained in this report will be most beneficial to the Michigan Water Resources Commissions, municipalities, and industry in their progressive stream pollution control programs. I would like to take this opportunity to comment on progress in stream pollution control at Great Lakes Steel Corporation and the material contained in the "Summary, Conclusions, and Recommendations" section of the Public Health Service Report.

Great Lakes Steel was built in Ecorse in 1929 and 1930 and its first steel was made in August 1930. Its Blast Furnace Division dates back to 1902 when Blast Furnace "A" was first constructed at the River Rouge site by the M.A. Hanna Company. In 1930, you may recall, this country was in the Great Depression and most of us, including the Federal Government, were more concerned about prosperity than about pollution.

The sharp contrast between stream pollution control then and now was pointed out in a statement made for our Midwest Steel Division at Portage, Indiana, by K.G. Jackson in March of this year at the Chicago water enforcement conference. Our Midwest Steel plant was placed in operation in 1960, and in his statement in Chicago, Mr. Jackson described a costly elaborate and highly efficient waste treatment facility designed and constructed as an integral part of this modern plant. The water effluent from Midwest Steel was given a clean bill of health by the Chicago conference. (It is well to note that this is a finishing plant and does not have all of the problems of stream pollution control associated with an integrated steel plant such as we operate here in Detroit.) My point is this, our Midwest Steel plant demonstrates National Steel Corporation's willingness to meet current stream pollution control requirements in new construction. This always has been and will continue to be the attitude of National Steel - to design new construction to meet the needs of the day. The standards on stream pollution control requirements are changing at an accelerated pace to meet the alleged needs of the day. It is not reasonable to expect industry to be constantly rebuilding and replacing stream pollution control equipment to meet these constantly changing standards. It is our belief, that unless some real damage can be related to a specific effluent, which was equipped with control facilities acceptable at the time of installation, that these facilities should be accepted as adequate throughout the useful life of the equipment.

This is the problem faced by any industry which must operate some older facilities in the fast changing stream pollution control standards field. As recently as April 1965, we were under orders by the State of Michigan to limit suspended solids to 85 ppm in our effluents; in May 1965, just one month later, it was recommended by the Federal Government that we reduce our solids effluents to 35 ppm; in April one company was under State orders to limit phenols to 600 lbs/day and in May the Federal Government recommended a limit of 20 ppb or 66 lbs/day; we went along for years with no established limits on ammonia-nitrogen and are suddenly informed that this constituent must be limited to 2.0 ppm. My point, gentlemen, is this, we are not opposed to progress or the development of new limits based on new knowledge; we are concerned, however, when these limits are applied to certain existing control facilities.

Through the years, Great Lakes Steel Corporation has, in good faith, installed stream pollution control equipment to meet requirements of the State of Michigan. These requirements are as restrictive and well enforced as any we have encountered throughout the country. If the conferees at this conference accept the newly recommended Federal effluent standards across the board, virtually all of this equipment will immediately become obsolete and unacceptable. We propose to the conferees, therefore, that they consider what might be called a "useful life" concept in the adoption of standards. That is to say that all existing equipment, installed by approval of the State of Michigan Water Resources Commission and operated to meet Orders of Determination of that Commission, be permitted to operate throughout the useful life of that equipment. As this equipment is replaced or materially modified, or as new installations are made for stream pollution control, that new standards which may be recommended by the conferees could then constitute the new Orders of Determination of the Commission. It is our contention that the effluent standards recommended by the Public Health Service in the Detroit River Report, for the most part, are presently unattainable and not suitable for this purpose.

Perhaps I should go through these effluent standards as recommended for industry and municipalities in the "Summary, Conclusions and Recommendations" of the Public Health Service report. They are as follows:

Suspended Solids	35 ppm
Settleable Solids	5 ppm

Phenol	20 ppb
Oil	15 ppm
Ammonia	2 ppm
Iron	17 ppm
BOD	20 ppm
pH	5.5 - 10.6

The recommended Public Health Service standards for suspended and settleable solids are to my knowledge the lowest ever recommended for a major watercourse such as the Detroit River. They cannot be met with any control equipment available to industry at this time.

MR. STEIN: Mr. Tucker, pardon me. Where did you get that 17 for iron?

MR. TUCKER: I believe it is in the Summary, is it not?

MR. STEIN: I didn't see it, and I checked with Mr. Poston.

MR. TUCKER: I understood it was.

MR. STEIN: All right.

MR. TUCKER: If I am wrong there, we will correct it.

MR. STEIN: Let's proceed on that assumption. All right, thank you.

MR. TUCKER: For example we recently rebuilt our Blast Furnace clarifiers to provide the finest equipment available at this time for solids removal. Twenty-four hour composite samples from this improved effluent ranged from 42 to 86 ppm with an average of 60 ppm suspended solids. Settleable solids ranged from 16 ppm to 38 ppm with an average of 36.5 ppm. These numbers represent good operation of the finest equipment available to industry at this time and yet this effluent comes no where near meeting the standards recommended by the Public Health Service. We recommend therefore careful consideration of these standards in light of existing control equipment capabilities.

The recommended Public Health Service standard of 20 parts per billion of phenol would limit our entire Blast Furnace-Coke Plant Division on Zug Island to an effluent containing only 15 lbs. of penol per day. At the two coke plants operated by National Steel Corporation; one located in Weirton, West Virginia, and the other here in River Rouge, we operate the only two known methods of phenol removal available at this time. These are the Podbielniak phenol extractor at Weirton, West Virginia, and the Wilputte dephenolizing process at River Rouge. As noted in the Federal report, Great Lakes Steel had a daily loading of 370 lbs. of phenol per day to the Detroit River. We believe that such a loading, using the best available control equipment, is reasonable, and that no damage to legitimate water use results from this effluent. For the conferees to accept the 20 ppb standard recommended by the Public Health Service would in effect be for them to say that no coke plants can be operated on the Detroit River. I am sure that this is not the intention of the conferees or the Public Health Service. We recommend careful consideration of this standard in light of existing control equipment capabilities.

We have no disagreement with the recommended 15 ppm standard on oil. It is a restrictive standard, but one which is considered necessary by the State of Michigan to protect migratory birds on the Detroit River. Such a standard can be met with available equipment and is for the most part being met by operations at Great Lakes Steel Corporation. All oil-bearing wastes are being treated at Great Lakes Steel prior to discharge to the Detroit River.

We believe establishment of a limit on ammonia is premature at this time. I cannot speak for other industries, but we in the steel industry were not aware of ammonia as a possible pollutant until March of this year. We do not know the extent of our ammonia discharges, damage if any to the receiving waters, or methods of control. It is our suggestion that the conferees undertake a study of ammonia-nitrogen to determine the extent of the problem and practical means of control prior to acceptance of a standard.

We have no disagreement with the recommended standards for iron or pH and will outline later in this statement Great Lakes Steel's progress toward elimination of this problem.

Although the Public Health Service report gives casual recognition to waste treatment controls installed by industry to treat waste waters entering the Detroit River, emphasis is placed time and again on the point that water quality is deteriorating due to additional loadings by industrial wastes.

Quoting from the summary and conclusions on page 1, paragraph 1;

"Pollution of the Detroit River will become progressively worse unless effective action is taken immediately."

and again on page 3, paragraph 2;

"While there is some evidence that water quality is improving, because of increased water uses damages are increasing, and unless remedial action is taken immediately the usefulness of the water resources of the Detroit area may be destroyed completely by pollution."

and again on page 5, paragraph 7;

"Reports of these investigations show the progressive deterioration of the Detroit River water quality from headwaters to mouth due to municipal and industrial waste discharges."

These repeated references would certainly lead one to believe that all industry cited in the report has been systematically increasing their waste loadings to the Detroit River. However, we find on page 6, paragraph 1, the following statement;

"Comparison of waste loadings discharged to the Detroit River during the 1948 IJC survey and the 1963 Public Health Service survey reveals over 50% reduction in phenols, cyanide, oil and suspended solids from industrial sources during the 15-year period."

This factual data contradicts the earlier suppositions of alleged increased industrial pollution and shows that progress is being made in control of industrial wastes. This 50% reduction in loadings has occurred while industry, at least Great Lakes Steel Corporation, has been rapidly expanding production in the Detroit area.

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Waste loadings at our Great Lakes plant have been reduced markedly over the past 10 years. A comparison of waste loadings (Slide 1), from the Great Lakes Steel Corporation, using data reported by the Public Health Service in 1955 and 1963 and our own company data collected in April 1965, shows a sharp reduction in loadings for a number of industrial waste products. During this period, steel production increased at the Great Lakes plant by 81%. Waste loadings to the Detroit River by Great Lakes Steel have been significantly reduced and will continue to be reduced as we will point out more specifically later in this statement.

I would now like to cover in some detail all of the outfalls from Great Lakes Steel Corporation which enter the Detroit River. This section of our statement will describe all treatment facilities installed and operating at Great Lakes and will place special emphasis on improvements in treatment practices which have been made since May and July 1963 when the survey of industrial effluents was conducted for this conference.

Blast Furnaces

Great Lakes Steel Corporation operates four blast furnaces at Zug Island in River Rouge indentified as A, B, C and D furnaces (Slide 2). Gas from these furnaces carries quantities of dust, consisting principally of coke, limestone, ore, sinter, and pellet particles. These particles must be removed before the gas is suitable for use as fuel, to prevent air pollution and fouling of gas lines and combustion equipment. Cleaning is accomplished by a three-stage system (Slide 3) consisting of a dry dust catcher to trap the large particles, wet scrubbers and wet electrostatic precipitators to capture smaller particles. The dirty water from the scrubbers and wet precipitators is pumped to two 80 foot clarifiers (Slide 4) where it is cleaned prior to discharge through No. 5 sewer.

Data collected during the July 1963 survey shows 33,550 pounds per day of suspended and settleable solids going to the river from these clarifiers.

At the time of the 1963 survey, a major change was beginning to unfold in blast furnace practice at Great Lakes Steel. Due to increased hot metal requirements, pellets were being included in the blast furnace burdens to replace ore and sinter. Pellets are dense spherical agglomerates produced from iron ore concentrates which are indurated (fired) to give surfaces which resist abrasion. Their addition to the burden increases pig iron production at the blast furnaces. They also result in marked changes in the amount and particle size of blast furnace dust.

In 1961 during a test run of pellets on "B" blast furnace at Great Lakes Steel, it was determined that a 50 per cent pellet burden reduced dust production from 105 lbs. per ton of pig iron to 45 lbs. per ton of pig iron or 57%. There was also, of course, an increase in pig iron production which amounted to 100 tons per day partially offsetting the reduction in dust loading. The particle size of the dust is reduced resulting in a larger percentage of the dust being carried to the clarifiers. Today the four blast furnaces at Zug Island are using approximately 60% pellets in the burden. (It is expected that pellets will constitute a larger percentage of the burden in the future.)

To treat the finer particle size dust in the gas washer water, the clarifiers at Zug Island were completely rebuilt in 1964. With the approval of the Michigan Water Resources Commission, they were converted from a two compartment design with top and bottom rakes to a single compartment design with a bottom rake only. This, plus other changes, has resulted in a reduction in total solids to the river to 9,900 lbs/day, 6,600 lbs of which are settleable after one hour. This improvement over the

33,500 lbs/day reported in 1963 meets requirements of the November 1951 Order of Determination of the Michigan Water Resources Commission. These units are currently operating at a collection efficiency of better than 98 per cent.

Coke Plant

Great Lakes Steel Corporation operates two coke plants on Zug Island. Two batteries of 146 ovens constitute the older No. 1 plant and two batteries of 148 ovens are located at No. 2 coke plant.

Coke plant effluents at Zug Island are confined to two sewers. No. 1 coke plant effluents are released through No. 4 outfall and No. 2 coke plant effluents are released through No. 8 outfall. These outfalls are the two principal sources of phenol at Zug Island, while No. 5 outfall from the blast furnace clarifiers contributes a smaller amount of phenol.

A general rule of thumb for phenol production from coke plants is that approximately 0.5 lbs. of phenol is produced per ton of coal coked. The Great Lakes Steel Corporation coke plants use approximately 7,200 tons of coal per day. The Public Health Service report lists a loading of 370 lbs. of phenol per day from our total operation at Zug Island. Based on this data,

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the efficiency of phenol removal at Zug Island is approximately 90 per cent. Such an efficiency represents a high degree of treatment for coke plant and blast furnace operations in the steel industry.

Control of phenol at Zug Island consists of treatment and containment of phenol bearing liquids. Ammonia liquor, which contains the highest concentration of phenol at the coke plant, is treated in a Wilputte dephenolizing tower shown in this slide (Slide No. 5). Phenol is removed by a caustic solution to produce sodium phenolate which is marketed commercially. All remaining phenol bearing waste liquids are contained in a closed system and distributed to the four coke quenching stations at Zug Island. These solutions are then used to quench incandescent coke, thus preventing these wastes from entering the Detroit River. A small portion of the phenol is retained on the coke and eventually finds its way to the blast furnace clarifiers resulting in a small phenol loading at the No. 5 outfall.

Phenol treatment practices at our Great Lakes Steel Corporation Coke Plant-Blast Furnace operations provide the best control available to the steel industry at this time. Following the 1963 Public Health Service survey, a comprehensive study of phenol treatment practices was undertaken by Great Lakes Steel Corporation. It was concluded that although treatment practices were optimum for this operation, improved housekeeping, maintenance and surveilance were desirable to prevent accidental discharges of phenol bearing wastes. To this end a waste control task force was appointed at Zug Island, made up of operating, maintenance and laboratory personnel. This task force was assigned responsibility to maintain two-hour surveilance of all outfalls, inspection of all possible sources of accidental spills, and recommendations for improved maintenance and operation of all waste treatment facilities. This action has resulted in more consistent and reliable operation of treatment facilities and a marked reduction in the occurrence of accidental discharges of all wastes originating on Zug Island.

It is our conviction that phenolic effluents from the Great Lakes Steel Corporation Coke Plant and Blast Furnace operations, under present treatment practices, do not interfere with the beneficial uses of the waters of the Detroit River. All effluents meet requirements of the November 1951 Order of Determination of the Michigan Water Resources Commission.

80" Mill

The 80" hot strip mill (Slide 6) in River Rouge was placed in operation on August 31, 1961. It was the first modern 80" mill designed to roll 1,000 lb per inch of width constructed by the steel industry.

In the design of this new mill, (Slide 7) a consulting firm specializing in industrial waste control was hired to assist in the design of waste treatment facilities and our own engineers drew upon their own extensive experience in high speed steel strip production. An Order of Determination adopted by the State of Michigan Water Resources Commission on June 25, 1959 described conditions of effluent water quality to be met by this new mill. On September 3, 1959, detailed drawings were submitted to the State describing treatment facilities to be installed by Great Lakes Steel on the 80" mill. These plans were approved by the Michigan Water Resources Commission by letter in September, 1959. The letter reads as follows:

"It is our opinion that your proposal offers reasonable promise of being capable of reducing the oil and solids content in your waste discharges to acceptable limits and the plans are approved."

We shared the opinion of the Michigan Water Resources Commission and proceeded to construct this rather impressive facility. The following slide shows its extensiveness.

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The overall size of this scale and oil removal plant (Slide 8) is 442 feet by 41-1/2 feet covering a ground area of 18,343 square feet. It was designed to handle a waste water flow of 46 million gallons per day. During the July 1963 survey by the State, the flow was measured at 42.13 m.g.d. The waste water first enters a scale pit (Slide 9) which is 40 feet by 41 feet by 12 feet deep, providing a retention time of 3 to 4 minutes where the very large particles of scale are removed; it then flows to a primary sedimentation basin which is 59 feet 6 inches by 41 feet by 12 feet deep providing a retention time of 5 to 7 minutes, where additional large particles are settled prior to pumping to the (Slide 10) secondary sedimentation basins. There are four secondary sedimentation basins, each basin sized at 151 feet by 20 feet 9 inches by 12 feet 6 inches deep, providing a retention time of 25 to 30 minutes for settling (Slide 11) of fine scale particles and oil flotation and skimming.

Scale is removed daily from the scale pit and primary sedimentation basin by clamshell (Slide 12). Fines are removed by a yard crane from the secondary basins as required. Approximately 8,000 tons of scale are removed per month and transported to the sintering plant. The 1963 survey of these outfalls by the State of Michigan showed wide variations in solids concentrations. During two separate sampling periods, suspended solids varied from 31 ppm to 86 ppm. This averaged 59 ppm suspended solids to the river.

Based on our scale recovery data averaging 270 tons per day scale removal and the loading to the river reported by the Public Health Service, this scale recovery system operates at an efficiency of 93.4 per cent. This facility, installed with the approval of the Michigan Water Resources Commission in 1959 and placed in operation in August 1961, was the finest Hot Strip Mill scale removal system every installed by any major steel company. However, today, it does not meet the new effluent standards recommended by the Public Health Service. In fact, today there is no equipment available to meet these standards.

Oil is skimmed from the secondary basins at a rate of 700 to 800 gallons per month. The 1963 State survey showed an oil loss of less than 15 ppm to the river. This meets State requirements, IJC objectives and Public Health Service criteria. Oil is removed by tank truck to the Ecorse plant where it is dewatered and used as open hearth fuel.

Although this facility was installed in 1961 according to the best available engineering know-how, was approved by the State of Michigan, and operates at a high rate of efficiency, we recognize that a small amount of fine particulate matter imparts a color to the Detroit River for a short distance from our outfall. Although we do not believe this color interferes with any beneficial use of the Detroit River, we have conducted a number of research test programs in an effort to develop means to improve this outfall. These investigations have produced no ready solution to this problem, and we are considering a new series of tests to determine the feasibility of high rate filtration. The fine particles which cause the color at the river are produced at the finishing stands on this mill.

Ecorse Plant - Great Lakes Steel

Hot metal produced at the Zug Island Blast Furnace Division of Great Lakes Steel is shipped by rail to the Ecorse plant where, in combination with scrap, it is refined to produce finished steel products. The Ecorse plant consists of open hearths, basic oxygen furnaces, blooming and slabbing mills, a hot strip mill, bar mills, continuous picklers, cold rolling mills, and annealing facilities. All of these facilities may require water for cooling, scale removal, or chemical dilutions. Some of this water is contaminated in the steelmaking and finishing processes and must be treated prior to discharge to the Detroit River. All of the process water at Ecorse, which may be contaminated with oils, greases, or solids in the steel-making and finishing process is treated prior to discharge. This amounts to approximately 105 million gallons per day which is approximately 90 per cent of the total water used at the Ecorse plant. The remaining 10 per cent is cooling water and waste pickle liquor. Sanitary wastes are handled in separate sewers and delivered to the city sewage system. I will discuss briefly each of the six outfalls at Ecorse which handle process water and the treatment applied to this water prior to discharge to the Detroit River.

Outfall No. 2

This is a 60" sewer handling a flow of approximately 6 m.g.d. This sewer in 1963 received water from 7 skin mills and the three 3-stand tandem mills. Since 1963 we have eliminated operation of two skin mills and during construction of a new 5-stand tandem mill have diverted all tandem mill waste water to No. 3 outfall. Following the 1963 Public Health Service survey, it was found that waste acid was leaking through a broken sewer into No. 1 oil basin causing a low pH and high iron level in the No.

2 outfall. This has been corrected by locating a new waste pickle liquor outfall north of No. 2 oil basin. The result of these changes is that since the 1963 survey, we have materially improved the quality of efflvent at No. 2 outfall. Changes have also been made in pickling practice resulting in improvements in waste pickle acid loadings. These changes will be discussed later in this statement.

The treatment facility at this outfall was installed in December 1955. (Slide 14) This installation known as No. 1 settling basin is 240 feet long, 40 feet wide and 20 feet deep. Oil is skimmed continually and decanted from the basin every 24 hours. Although this is primarily an oil basin, scale and bottom slude are removed as required and amounts to approximately 700 tons per year.

Outfall No. 3

This is an 84" sewer handling a flow of approximately 50 m.g.d. This sewer in 1963 received water from the 96" hot strip mill and some pickle line rinse water. As noted earlier, due to construction of a new 5-stand tandem mill, No. 3 outfall is presently receiving water from the three 3-stand tandem mills. During 1963, No. 2 settling basin, which serves No. 3 outfall, was receiving waste sulfuric acid from a leak in the acid sewer resulting in a low pH and high iron values. As noted earlier, this leak has been corrected and pH and iron values are now within acceptable limits. The addition of tandem mill water to this effluent has not resulted in any reduction in efficiency of oil and solids removal in No. 2 settling basin over results reported in 1963.

The treatment facility (Slide 15) at this outfall was installed in November 1956. This installation known as No. 2 settling basin is 540 feet long, 40 feet wide and 20 feet deep. Oil and solids removal are handled in the same manner as that reported for No. 1 basin. Solids removal amounts to 3,000 to 5,000 tons per year. A primary scale pit located at the 96" hot strip mill removes most of the heavy scale produced by the mill before this process water is delivered to No. 2 settling basin.

Outfall No. 4

This is a 72" sewer handling a flow of approximately 30 m.g.d. As reported in the 1963 survey, this outfall receives water from the No. 1 open hearth, 21" billet mill, 40" blooming mill, and the 10" and 14" bar mills. Primary scale pits are located at the blooming mill and bar mills for heavy scale removal.

The treatment facility at this outfall was installed in June 1957. (Slide 16) This installation known as the No. 3 settling basin is 565 feet long, 40 feet wide and 20 feet deep. Oil and solids removal are handled in the same manner as basins 1 and 2. Solids removal amounts to 2,000 tons per year.

The three settling basins (Slide 13) described above handle a total flow of 86 m.g.d. For most plant processes, they represent secondary treatment with primary scale and oil removal taking place at each major process.

On April 23, 1953, installation of these three basins was approved by the Michigan Water Resources Commission. In their letter of approval, the Commission wrote the following:

"This proposal you have developed appears to offer reasonable promise of being capable of reducing the oil content of your discharges to acceptable limits. It represents the most practical and effective approach to the problem that we can think of and because of the physical limitations you must contend with, it overcomes most of the disadvantages that would be found in other methods that could be devised. Approval of these plans is therefore granted."

In 1964, these basins (Slide 18) removed

4,000,000 lb of oil from outfalls 2, 3, and 4 at Ecorse. This oil is dewatered and used as open hearth fuel. (Slide 19) We believe these facilities to be adequate for oil and scale removal on these three outfalls. (Slide 20) However, in our constant search for improved methods of oil removal, in April 1965 we installed on a test basis an automatic oil removal unit. (Slide 21) If proven feasible, these units will be installed on these basins to provide continuous removal of oil, thus eliminating the possibility of accidental discharges to the Detroit River.

This is a continuous belt oil removal system, and the benefit of this installation, of course, is to avoid the problem of having to manually decant oil from the basins. This poses a considerable problem for us and for many other industries. The oil is continually removed on the belt, drains from the little slot shown on the bottom.

Of course, this is a small section that was put in to check the installation of our plant. Since this report has been written, we have purchased a number of these units, 24-inch units. They will be installed at our oil basins in Ecorse.

New 5-Stand Tandem Cold Rolling Mill

As noted earlier in this statement, Great Lakes Steel Corporation is committed to installation of

Fred E. Tucker

the finest available stream pollution control equipment on new facilities. During the third quarter of this year, Great Lakes Steel will place in operation a new five-stand tandem mill, the finest cold rolling mill installed to date in the steel industry. Waste water treatment facilities installed with this mill will provide excellent treatment for control of oil. This mill will replace one 3-stand tandem mill and two single-stand skin pass mills. This slide (Slide 22) shows this mill under construction at our Ecorse plant.

The primary stream pollution control benefit derived from this mill is in its basic operating design. Older design tandem mills used oil on a direct application system. Oil and water were applied to the rolls, used once, and discharged to the sewer. This new 5-stand mill will be equipped with a recirculating oil system. Oil in solution will be recirculated through filters and used over and over again on the mill. At the end of its useful life, the oil will be dumped to a holding tank, treated by an air flotation process to float the oils to the surface, and skimmed. The oil will be centrifuged and reused at the continuous picklers. The clarified waste water will be discharged to the No. 1 settling basin for further clarification prior to discharge to the Detroit River.

Removal of the oil at the mill will significantly reduce oil loadings at the No. 1 settling basin and thereby reduce the possibility of accidental oil discharge to the river.

This is another example of Great Lakes Steel Corporation's willingness to provide the best available stream pollution control equipment on new installations. I mentioned earlier the excellent stream pollution control program built into our new Midwest Steel Division the controls installed on the new five-stand tandem mill at Great Lakes are even more advanced than those so highly acclaimed at Midwest Steel, in addition, the new Great Lakes tandem mill provides water conservation, in that water requirements are much less on a recirculating tandem mill than on a direct application mill of the same capacity.

Outfall No. 11

This is a 60" sewer handling a flow of approximately 10.8 m.g.d. As reported in the 1963 survey, this outfall receives water from the No. 3 slabbing mill. A primary scale pit is provided to collect heavy scale produced at this operation. A secondary scale pit (Slide 23) installed with the slabbing mill in 1953 and as shown in the next slide, is 66 feet long, 16 feet wide and 36 feet deep. A water level of 9 feet is maintained at the skimmer.

This installation is covered by a Michigan Water Resources Commission Order of Determination dated November 28, 1951. At the time of installation of this facility, it was considered adequate for scale and oil removal at the No. 3 slabbing mill. Since that time, however, flows have increased, and although considerable scale is being removed (approximately 11,000 tons per month), turbulence in the basin makes oil skimming very difficult.

Prior to receipt of the Federal report, we were considering installation of an additional secondary oil basin and settling pit at this location to reduce oil concentrations below 15 ppm. However, the new criteria for solids cannot be met by any conventional settling basin. For this reason, we have shelved these plans and are considering a study of high rate filtration similar to that proposed for the 80" mill effluents.

Acid Pickling Wastes

During the industrial effluent sampling period in May 1963, at which time data was collected by the Public Health Service for this conference report, Great Lakes Steel was operating four horizontal continuous sulfuric acid picklers. All of the waste acid from these picklers was going to the Detroit River following dilution with plant cooling water. The acid load amounted to approximately 158,000 lbs. per day. In May of 1964, to reduce acid discharges and improve production capabilities, Great Lakes Steel began pickling with hydrochloric acid instead of sulfuric acid. Due to the rapid rate of reaction of HCl, nearly complete utilization of the acid is possible and instead of releasing waste sulfuric acid at a concentration of 8 to 10 per cent, we are now able to release a smaller amount of waste hydrochloric acid and at a concentration of approximately 0.2 per cent. This has reduced acid loadings to the river to approximately 6,000 lbs. per day versus the 158,000 lbs. per day loading with sulfuric acid pickling -- a reduction of 152,000 lbs. per day -- equal to 96.3 per cent.

A process has been developed in Europe called the Reuthner Hydrochloric Acid Recovery Process, to recover hydrochloric acid and dry iron oxide from waste acid produced in the Reuthner Tower pickling process. Although there are a number of process changes necessary to be worked out to apply this recovery process to the weak acids produced in a horizontal continuous pickler, we are optimistic that a similar roasting process will permit us to almost completely eliminate wastes of any kind from the steel pickling process.

Conclusions

We believe that Great Lakes Steel Corporation, in cooperation with the Michigan Water Resources Commission, has shown a great deal of steady progress in the control of stream pollution at its Zug Island, Hot Strip Mill and Ecorse plants. This progress over the past ten years has resulted in significant reductions in waste loadings from these plants even though steel production at these plants has increased approximately 80 per cent during the same period. The United States Public Health Service Report under review here today, states that water quality in the Detroit River is deteriorating due in part to increased industrial pollution. This is not the case at Great Lakes Steel and we believe the record should be corrected to show past, present, and future stream pollution control progress at Great Lakes Steel through cooperative efforts with the Michigan Water Resources Commission.

The Public Health Service Report also recommends, (and incidentally, to our knowledge for the first time in any Federal conference), tailored industrial waste effluent standards. As we have pointed out earlier, these recommended standards are in some cases unprecedented, unreasonable, impractical and confiscatory. Some are certainly unnecessary to protect water uses on the Detroit River. They also do not recognize those companies which have - in good faith - invested millions of dollars to install facilities to meet Orders of Determination of the State of Michigan. We recommend to the conferees that these installations be given some degree of recognition and not be placed in immediate violation by a new set of Federal standards, many of which are presently unattainable.

The Public Health Service Report does stress the importance of maintaining as near as possible 100 per cent operation of equipment installed to control waste effluents. The March 1962 Federal conference pointed up the need to maintain waste treatment facilities at maximum efficiency and performance. To this end Great Lakes Steel Corporation established stream pollution control task force groups at each plant to maintain a visual inspection of all facilities and effluents every two hours. Where these inspections indicate deficiencies in equipment or operations, corrective steps are taken as soon as possible. These task force groups meet regularly to discuss stream pollution control and recommend improved practices which result in reduction in waste loadings or water use.

The steel industry is currently undergoing widespread technological change. Great Lakes Steel

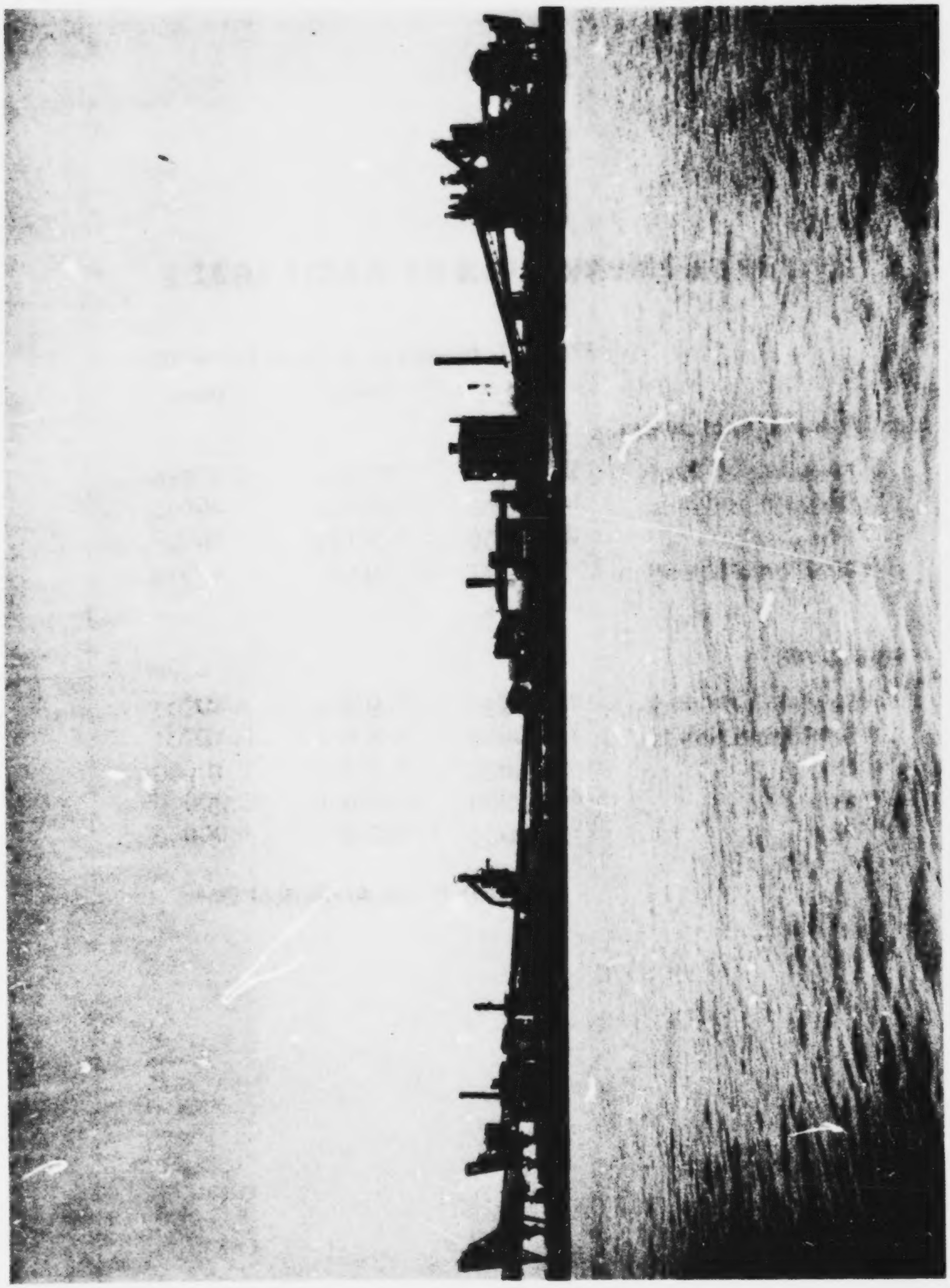
Corporation is in the forefront of this technological progress and as changes in operating practice are made, improved methods of waste treatment and water conservation are being and will be established. We urge the conferees to recognize the progress that has and is being made in industrial stream pollution control on the Detroit River. This conference and study report have been beneficial to all in stressing the importance of stream pollution control and pointing out deficiencies in waste treatment practices. We appreciate the opportunity to constructively comment on the Public Health Service Report and relate in detail to the conferees stream pollution control progress at the Great Lakes Steel Corporation.

Thank you.

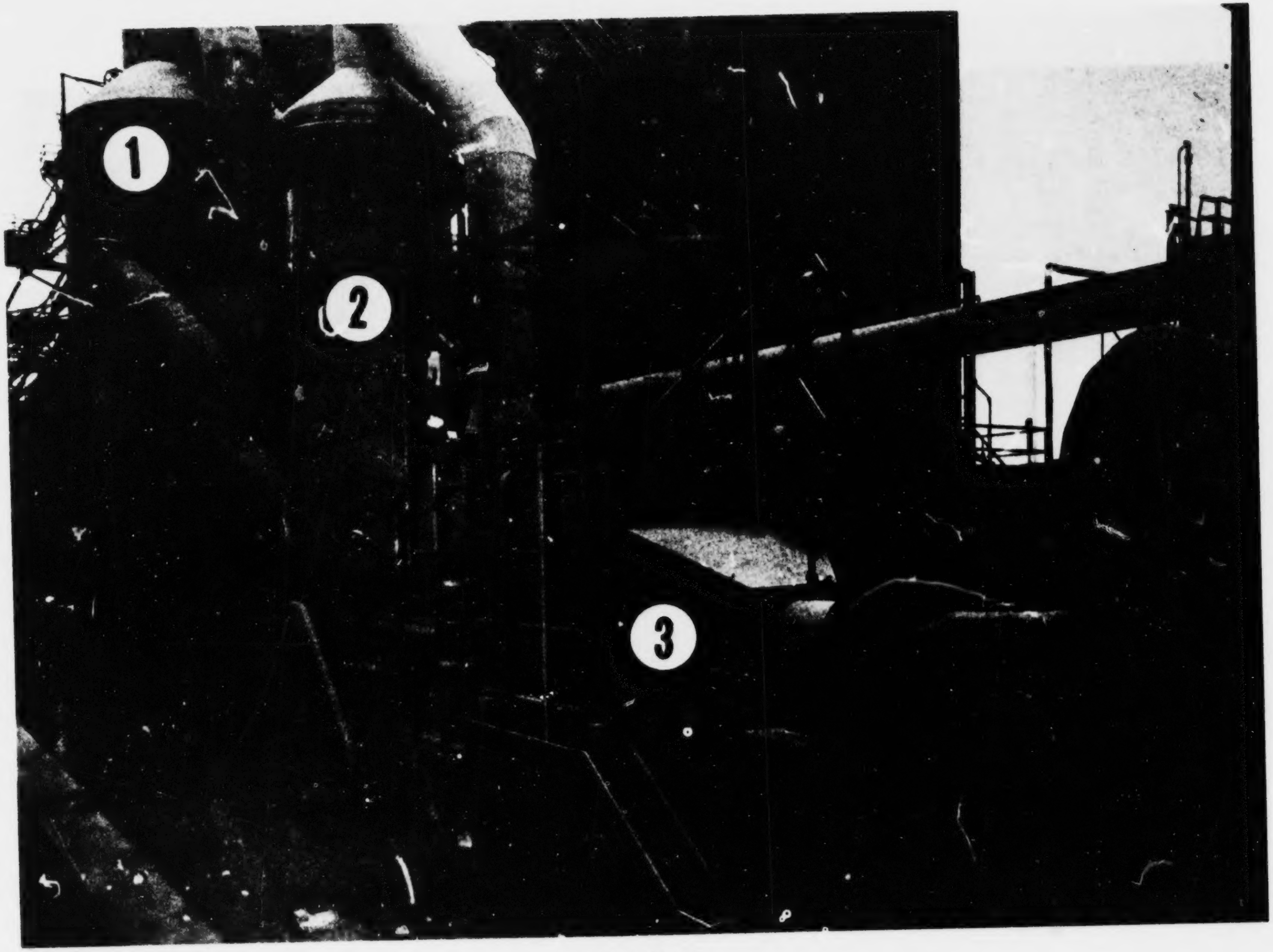
TEN YEAR COMPARISON OF WASTE LOADS

	Waste Loadings In Pounds Per Day		
	1955	***1963***	***1965***
Blast Furnace Thickeners			
Suspended Solids	86,200	37,850	9,898
Settleable Solids	81,500	33,550	6,605
Iron	29,300	5,146	NAD*
Ammonia-Nitrogen	671	NAD*	395
Ecorse Plant			
Suspended Solids	19,800	8,400	NAD*
Settleable Solids	11,800	6,800	NAD*
Oil	8,400	8,100	8,100
Iron	43,700	49,000	35,000
Acid	284,000	158,000	6,000

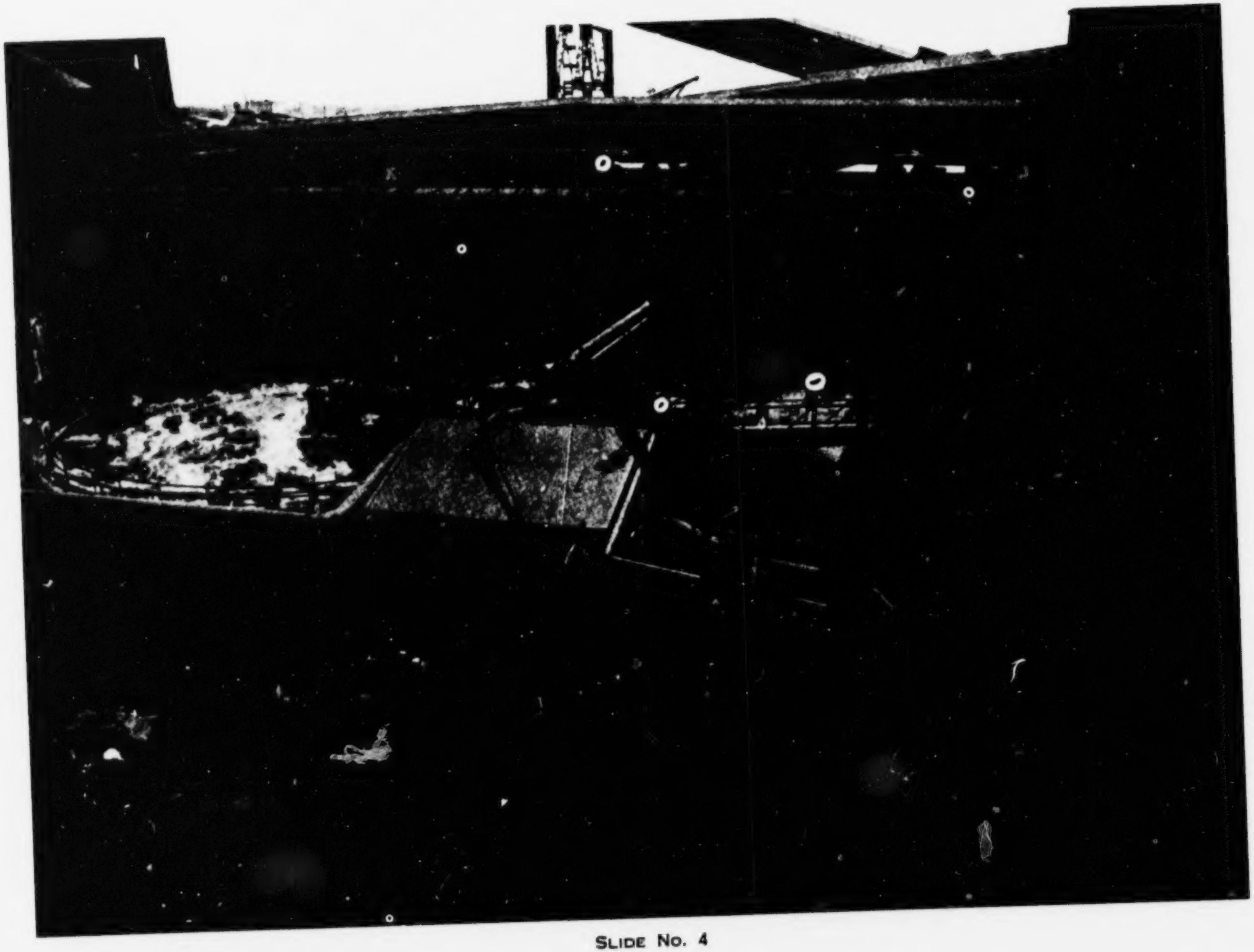
*NAD = No Analytical Data



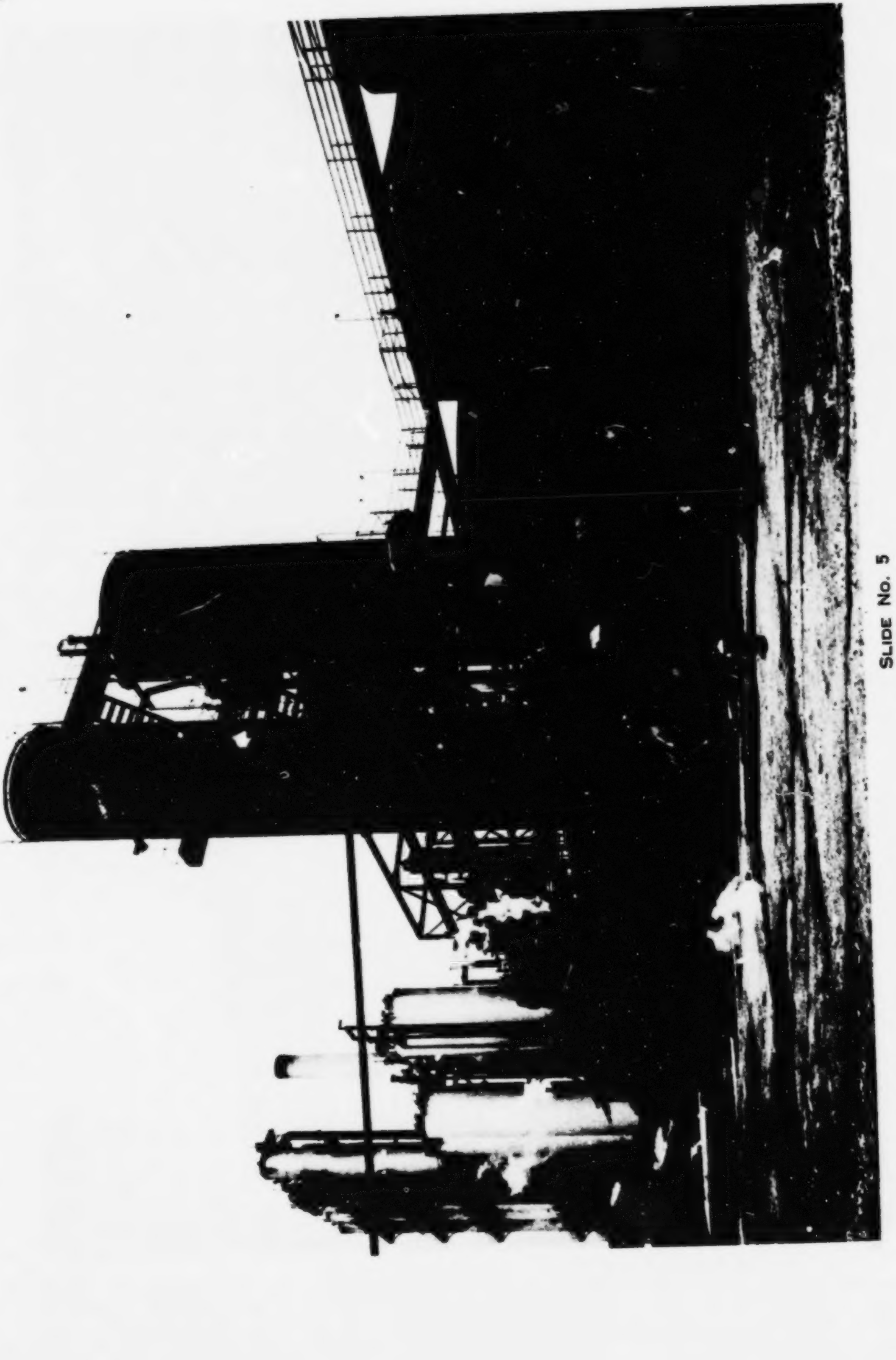
SLIDE No. 2
General View of Blast Furnaces



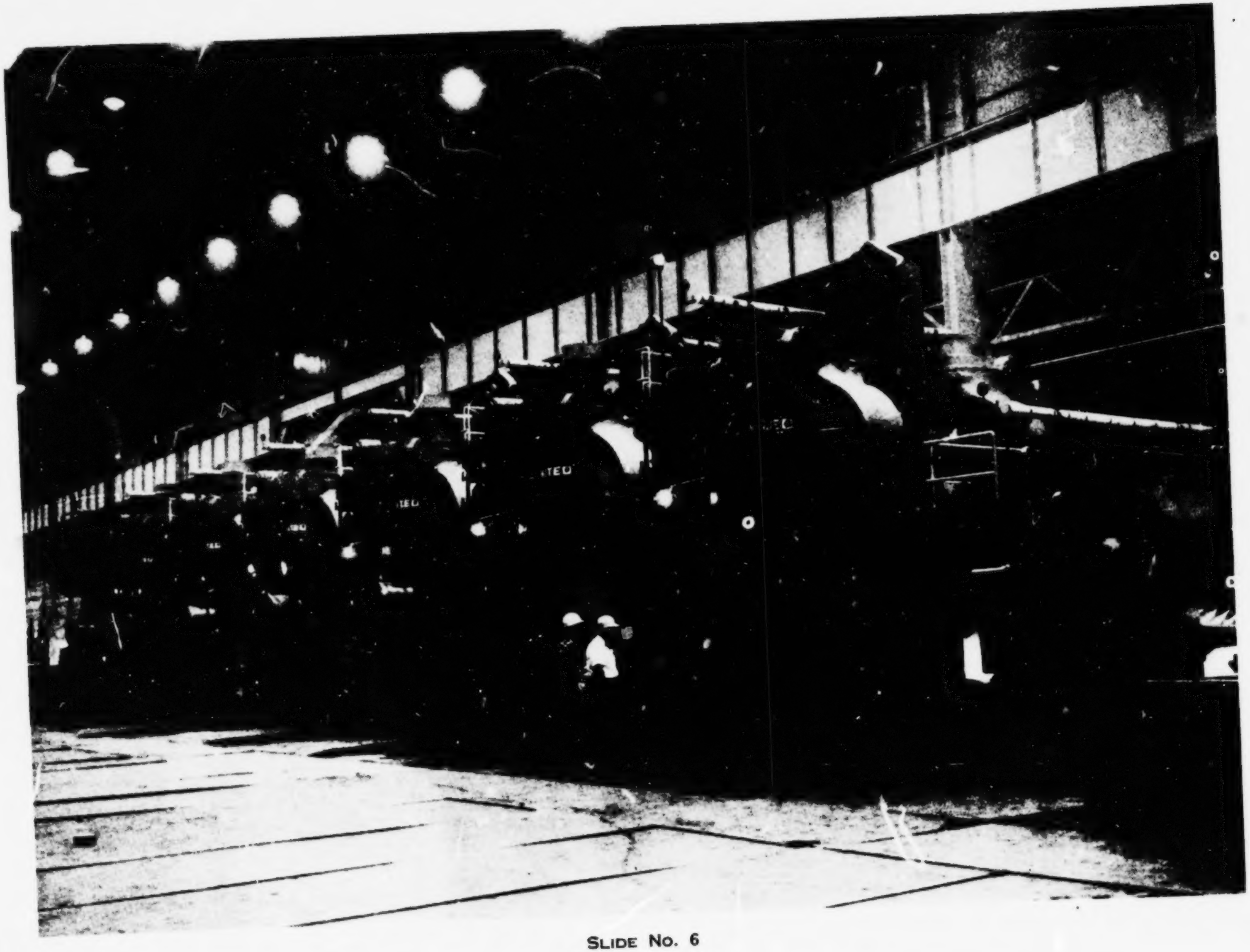
Slide No. 3
Dry Dust Catcher, Wet Scrubbers, Precipitators



SLIDE No. 4
Clarifiers

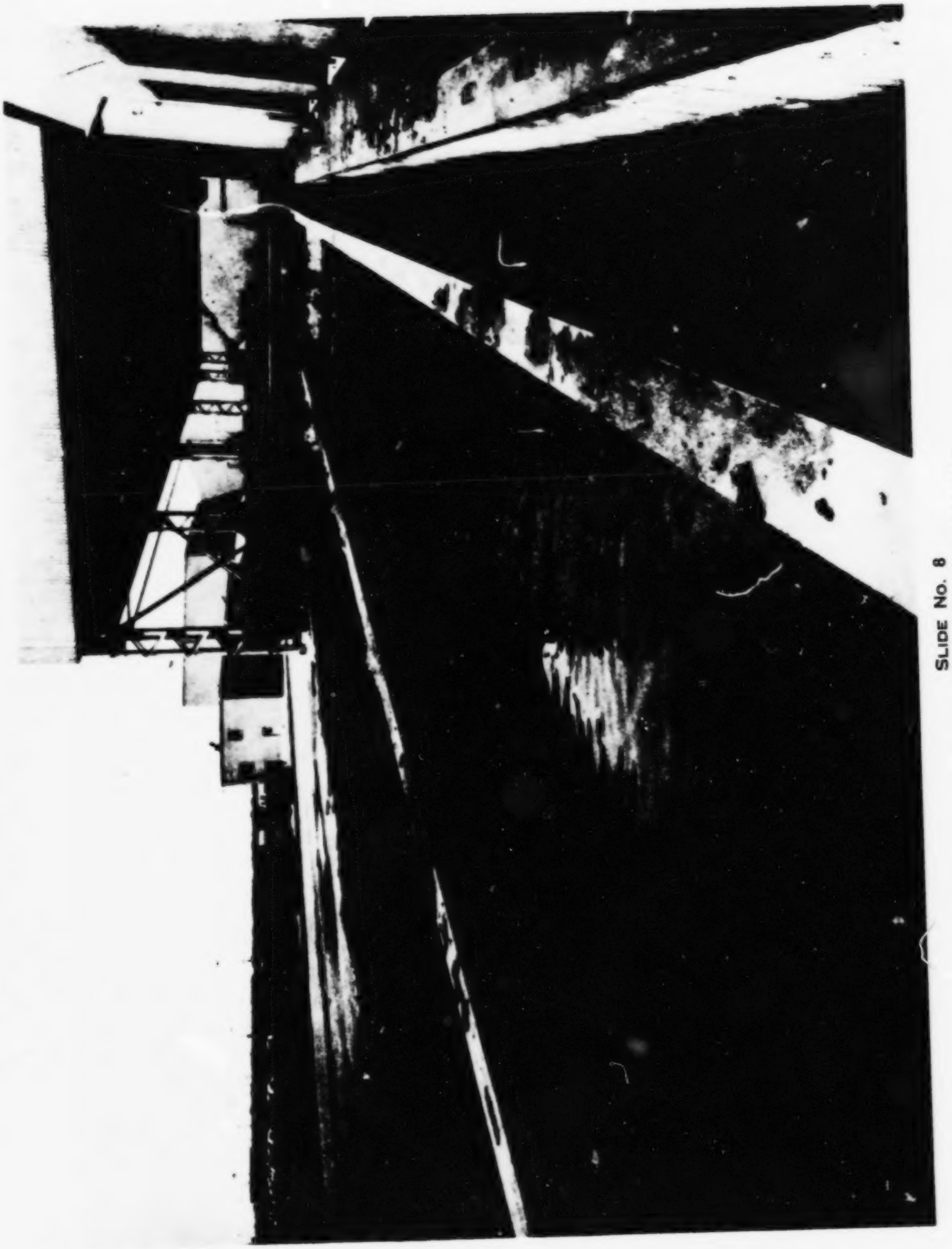


SLIDE No. 5
Dephenolizing Towers



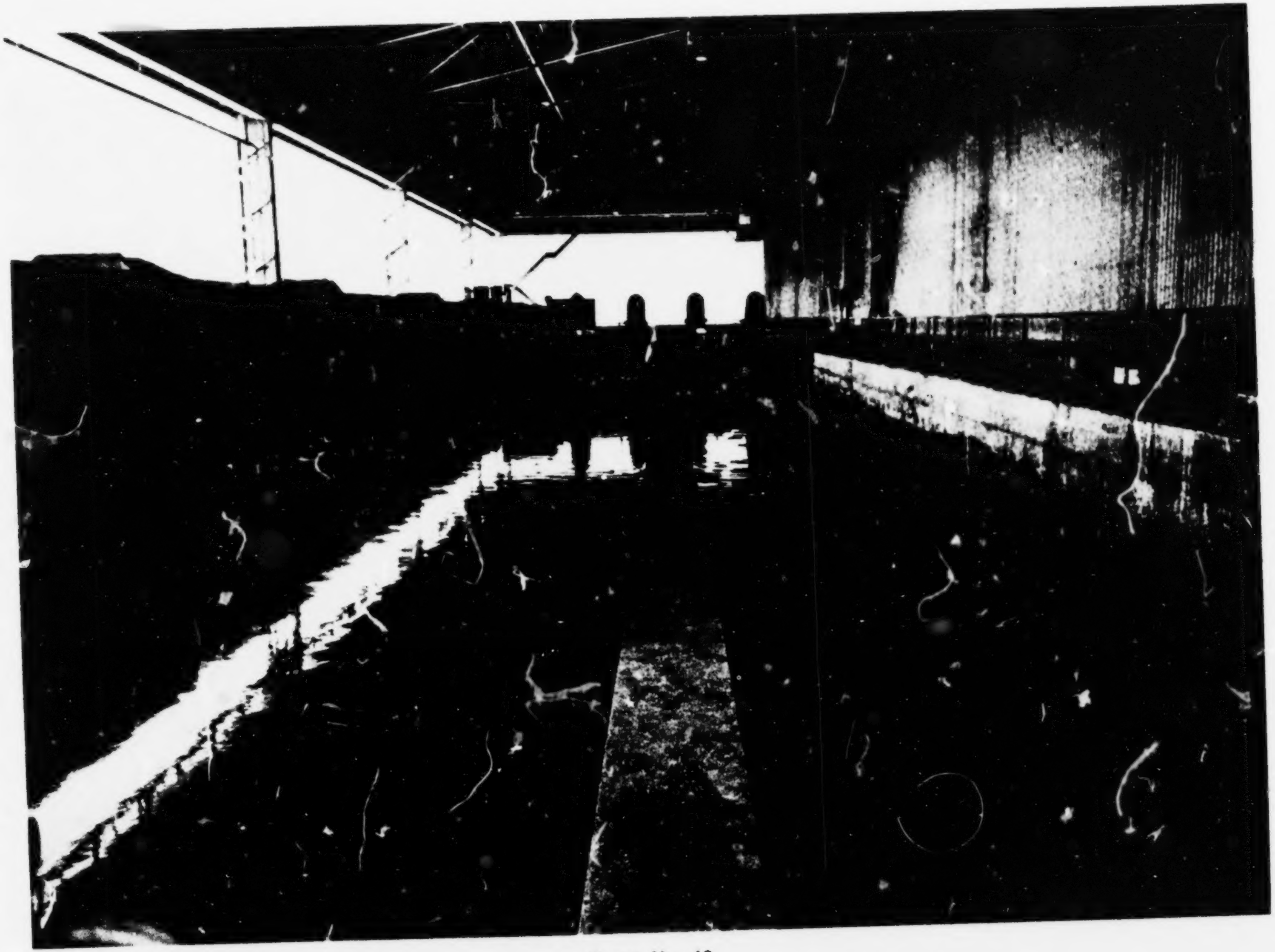
Slide No. 6
80" – Mill Interior

Slide No. 7
80" – Mill Exterior



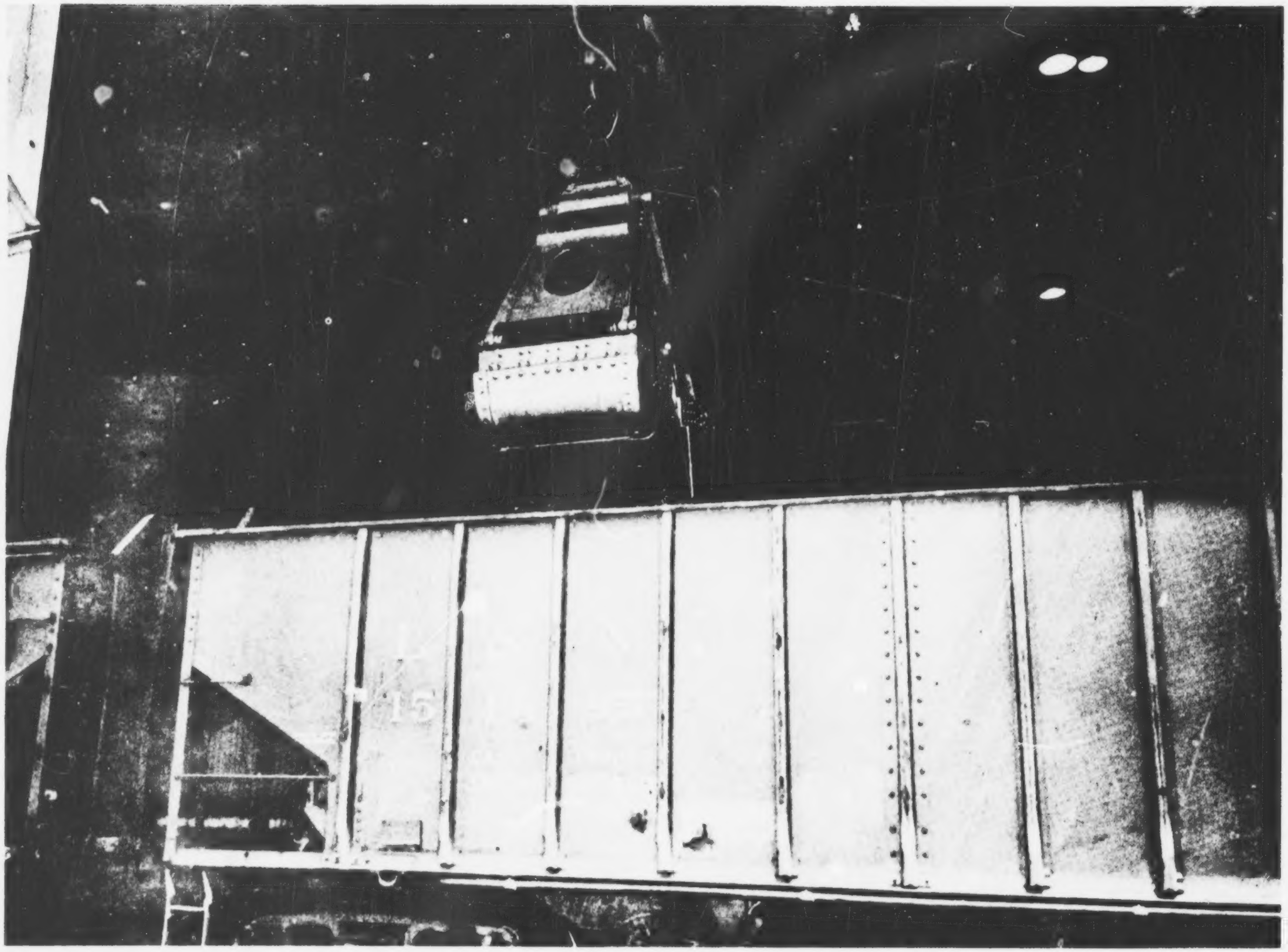
SLIDE NO. 8
Scale and Oil Removal Plant – 80" Mill

SLIDE No. 9
Primary Sedimentation Basin

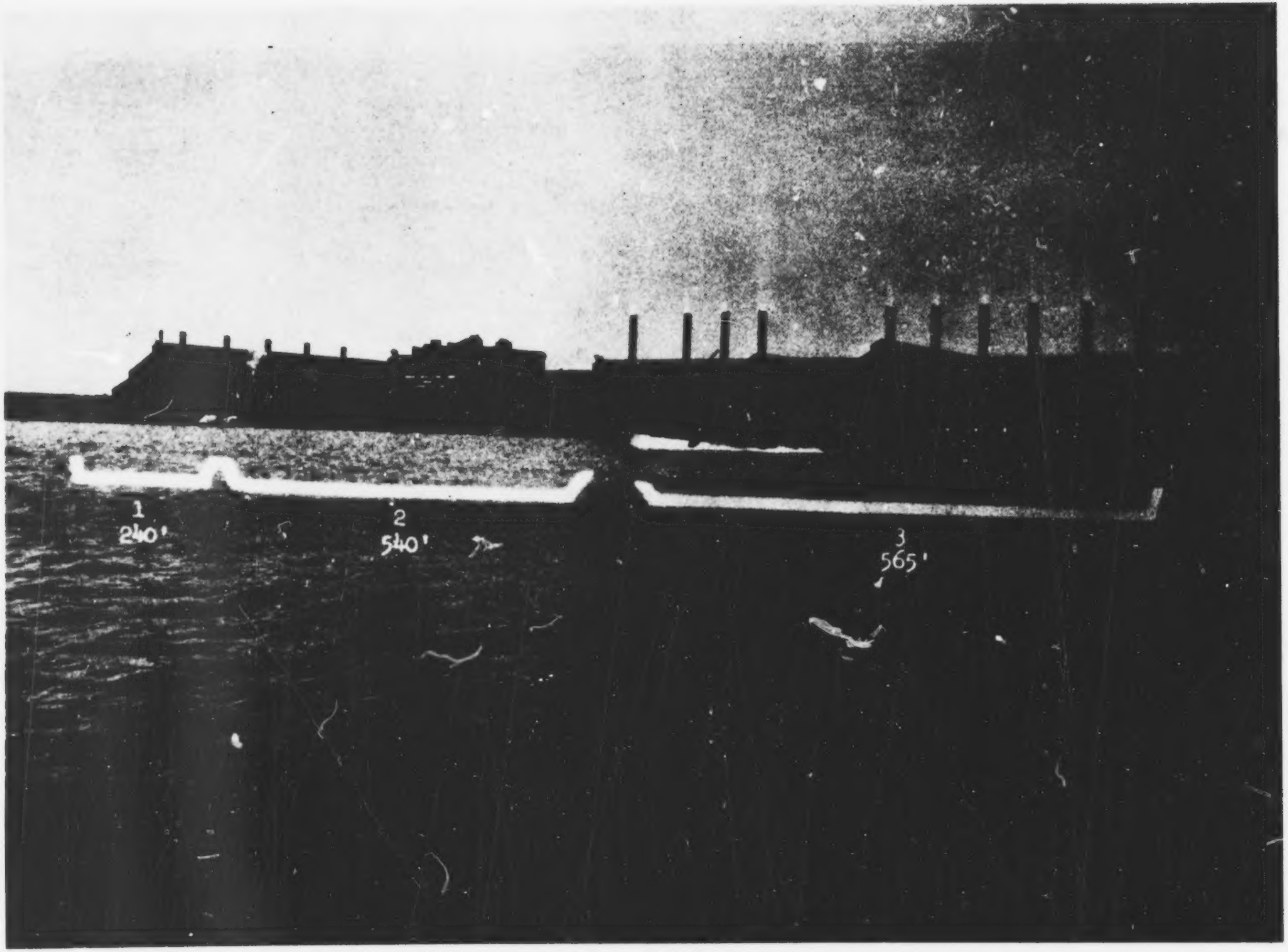


Slide No. 10
Secondary Sedimentation Basins

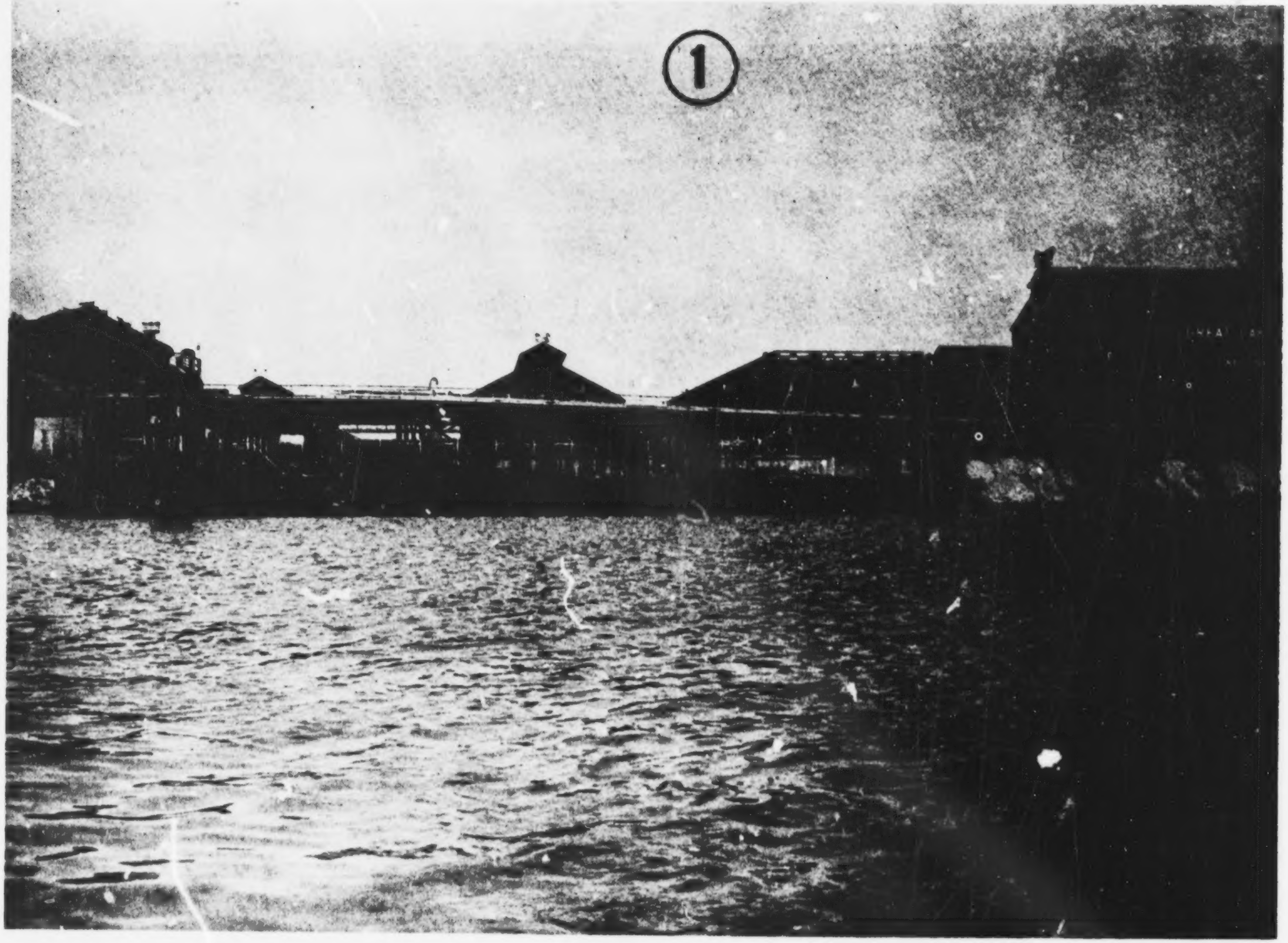
SLIDE No. 11
Water After Settling



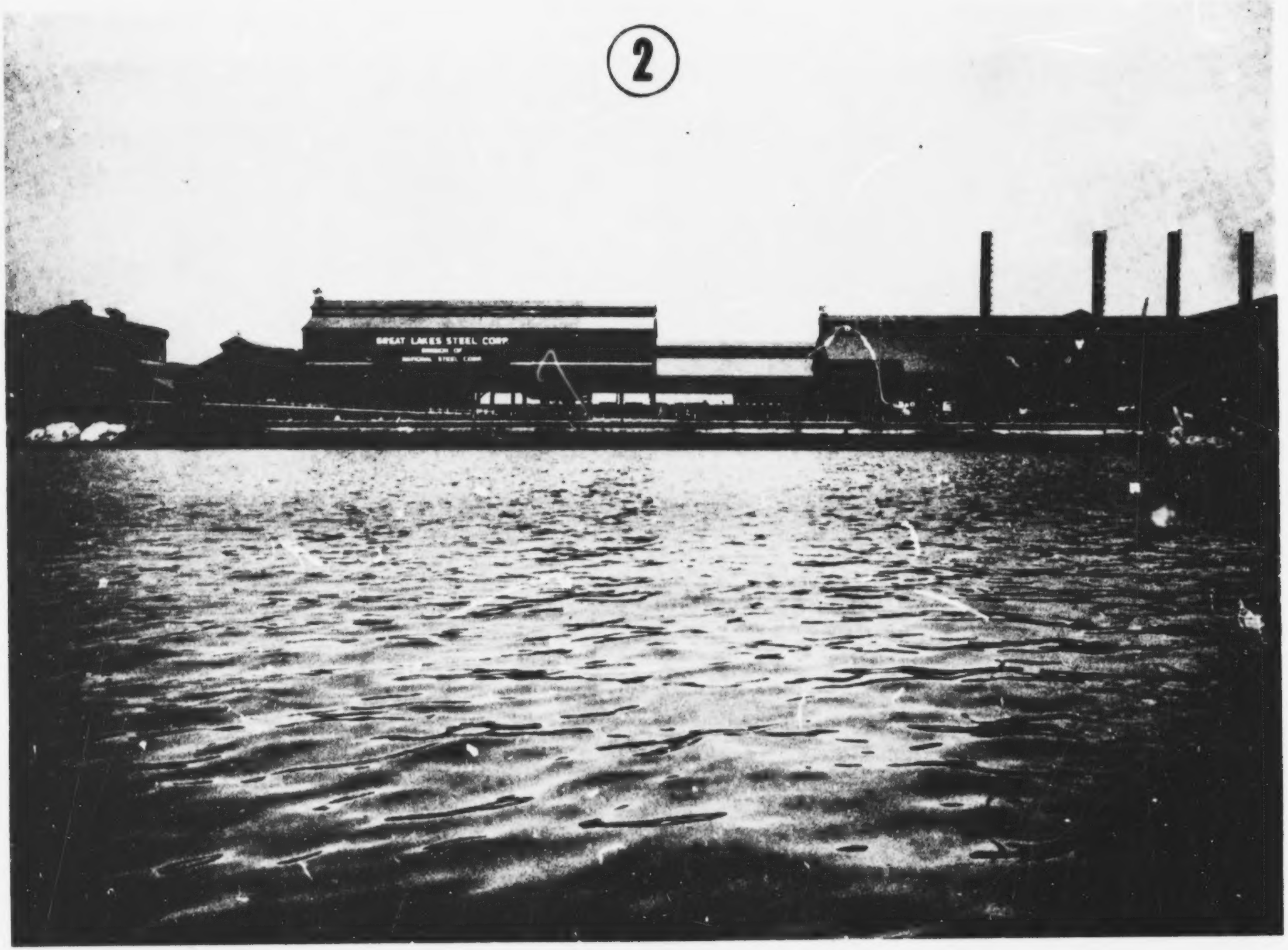
SLIDE No. 12
Scale Removal


1
240'
2
540'
3
565'

Slide No. 13
Oil Skimmers on Detroit River



Slide No. 14
No. 1 Skimmer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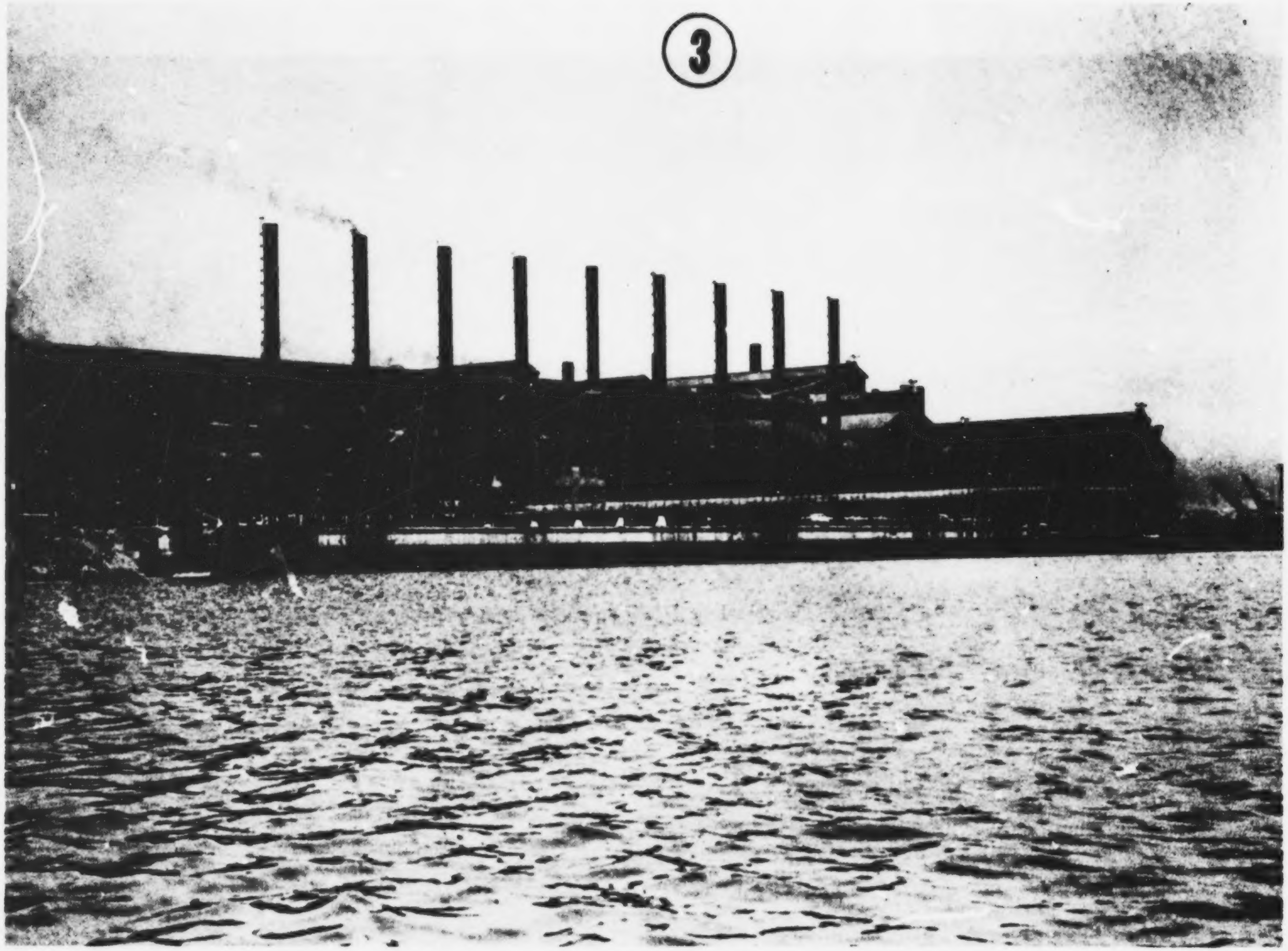
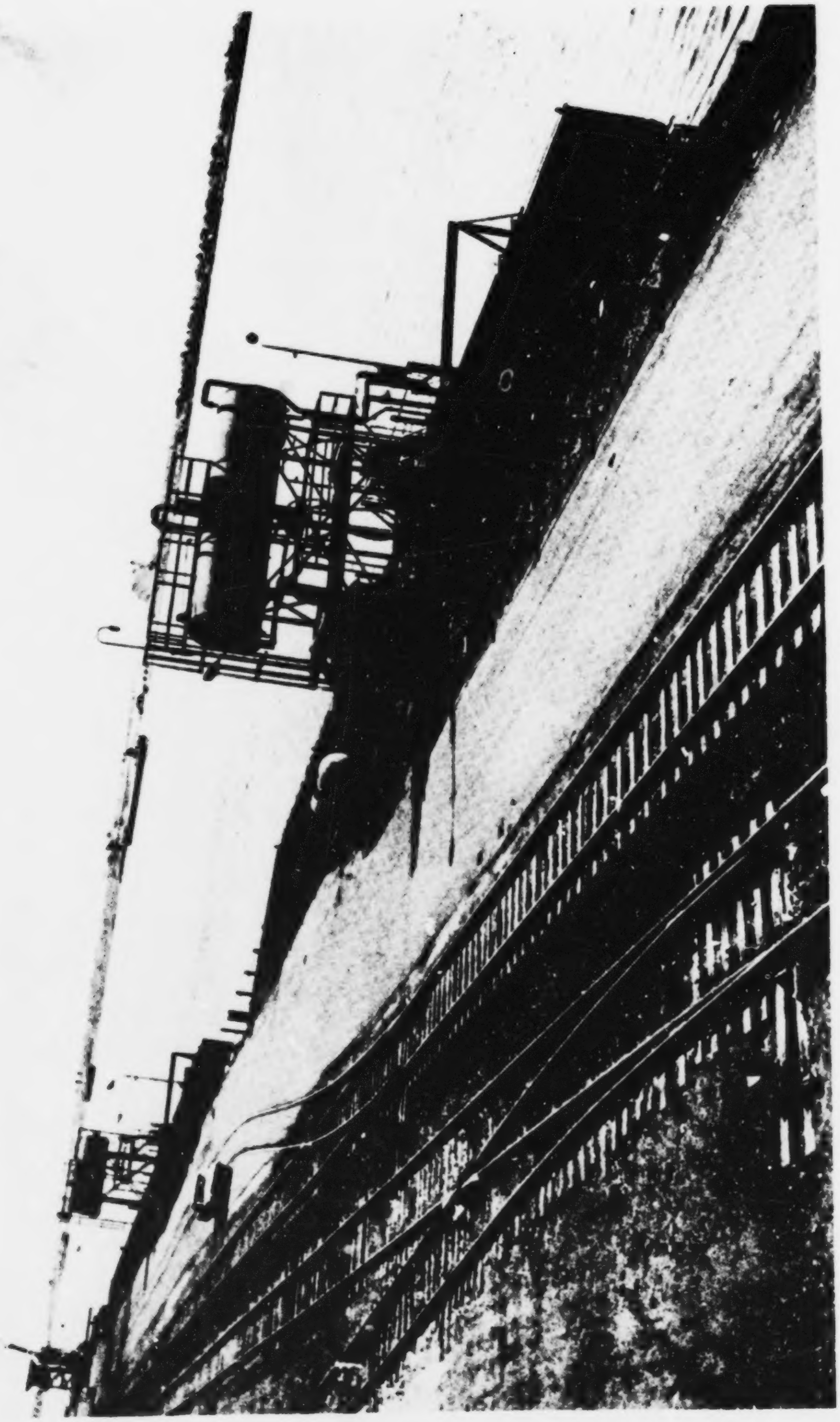
GREAT LAKES STEEL CORP

SLIDE No. 15
No. 2 Skimmer

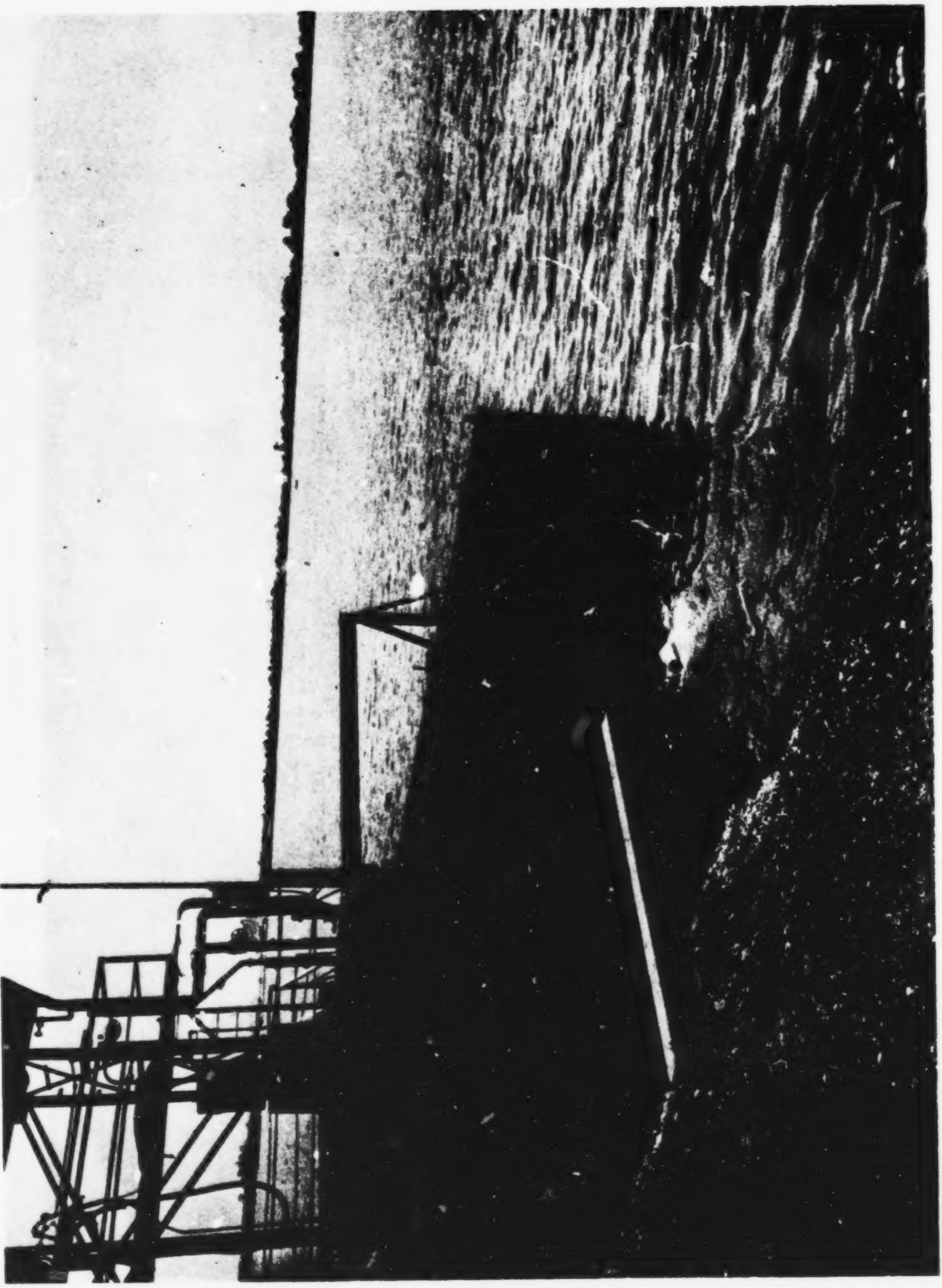


SLIDE NO. 16
No. 3 Skimmer



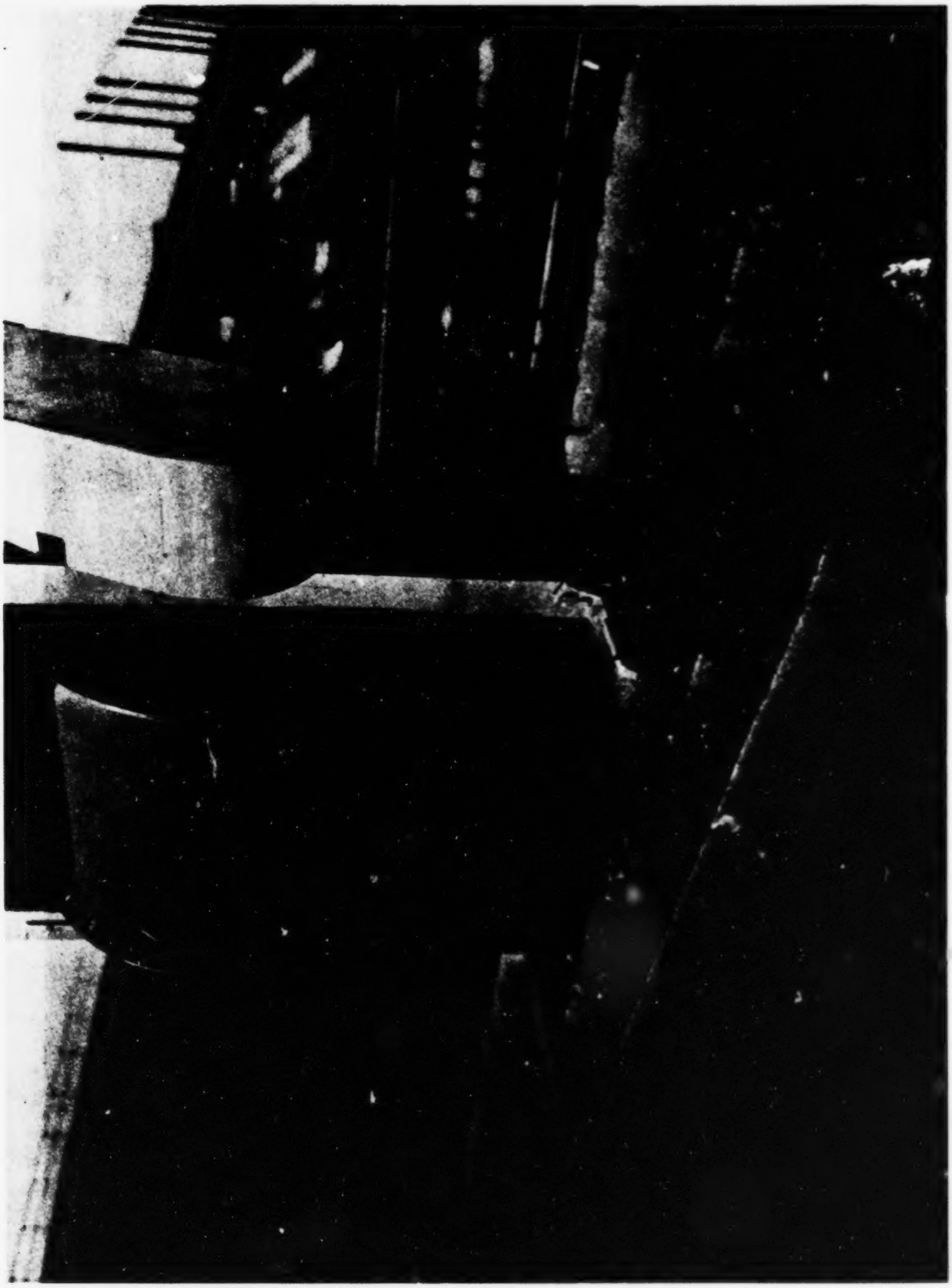
Slide No. 17
Skimmer Closeup

SLIDE No. 18
Water Comparison

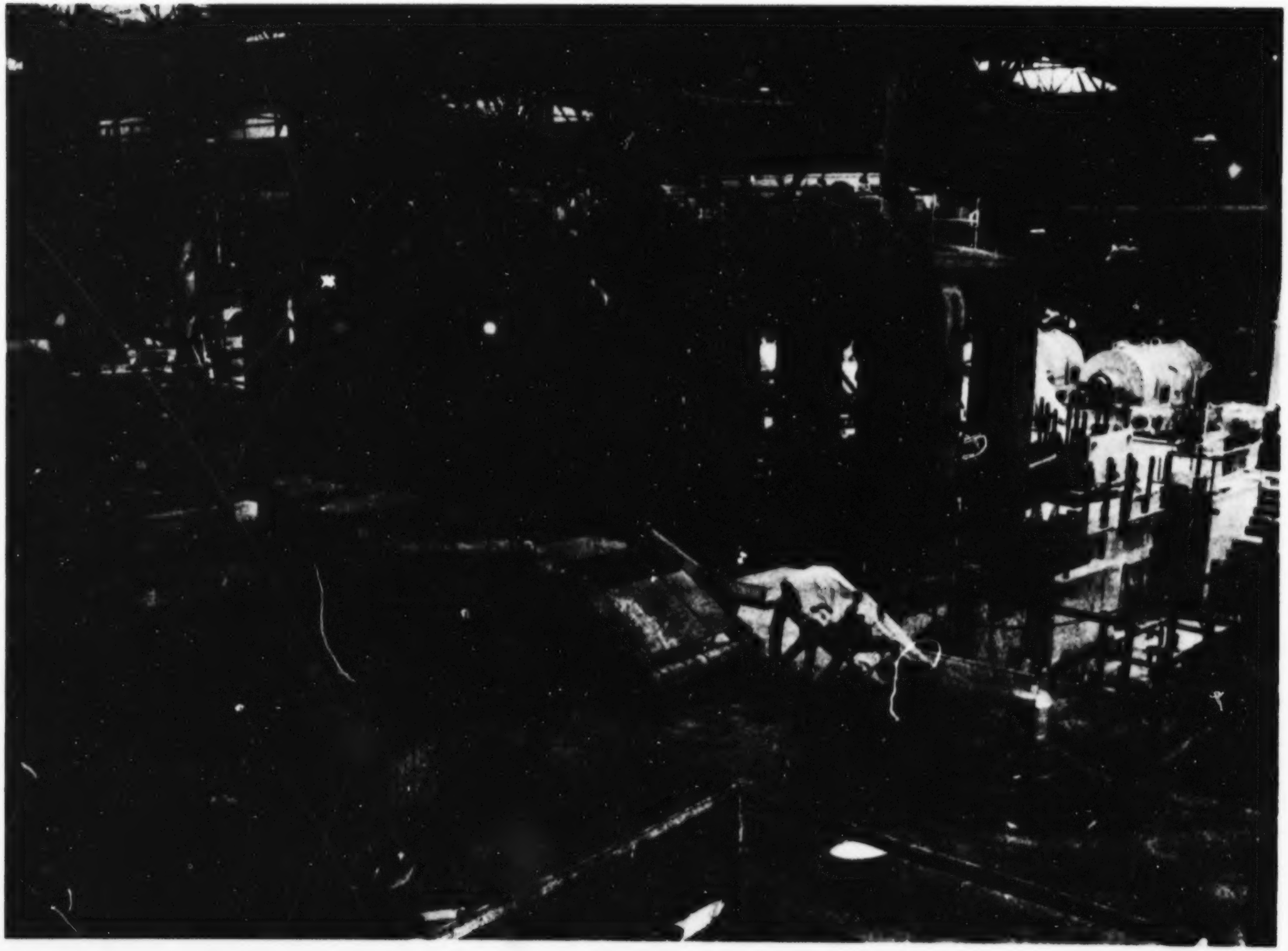


SLIDE No. 19
Skimmer Outlet

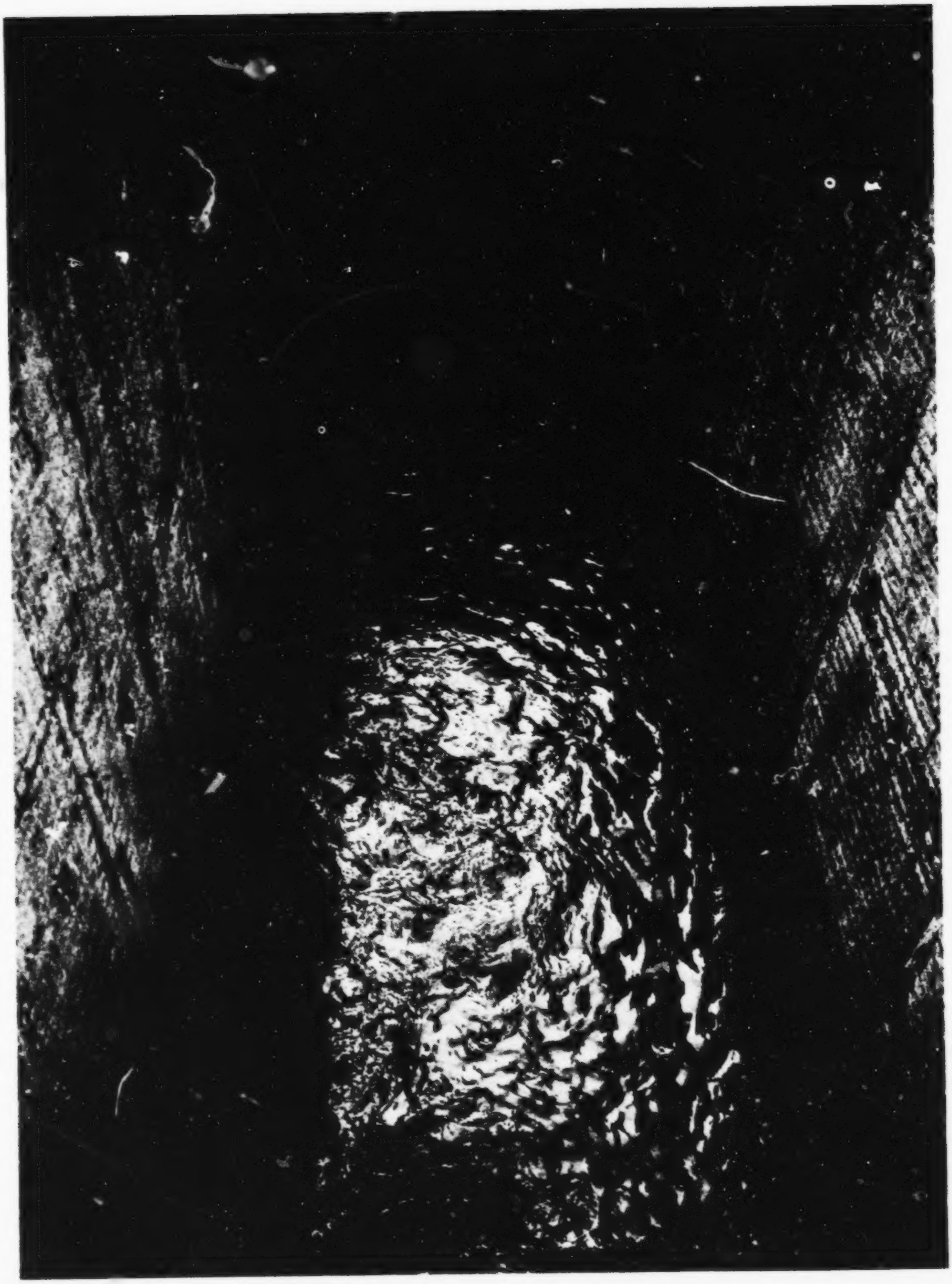
SLIDE NO. 20
Skimmer Belt



Slide No. 21
Skimmer Belt Operation



Slide No. 22
5 – Stand Tandem



Slide No. 23

No. 3 Slab Mill Scale Pit

MR. STEIN: Thank you, Mr. Tucker. I shall see what we can do about getting your pictures reproduced in the record.

MR. TUCKER: All right.

MR. STEIN: We are getting quite a few, and depending on the cost; if we cannot swing this cost, there will be a notation made where they are available on file, but I shall do my best to see that they are reproduced.

Are there any comments or questions?

MR. POSTON: I think Mr. Tucker is to be commended here for the detailed report. I had a couple of questions; one, particularly, about your treatment work at the 80-inch strip mill.

MR. TUCKER: Yes.

MR. STEIN: Which you have constructed over a period from about 1959 to 1961?

MR. TUCKER: I believe that is correct.

MR. STEIN: About two and a half or three years.

MR. TUCKER: Right.

MR. POSTON: Is that a pretty usual time?

MR. TUCKER: This is not limited to the treatment plant, itself. This apparently was the time necessary for the construction of the facility and I believe the first date indicates the date at which we went to the State, which would be in the planning stage.

MR. POSTON: I see.

MR. TUCKER: We do not approve any plans until they have been reviewed by the State of Michigan.

MR. POSTON: It could be quicker than that then, is what you are saying?

MR. TUCKER: On the installation of the treatment facilities certainly could have been quicker and was. This was a matter of approving the plans, design, and construction of the mill. We try to get these things done as much in advance as possible, particularly those portions of the plant which must be approved.

Another thing, you talked of surveillance or checking every two hours on the waste load to the stream visually. I wonder, do you do analytical work, sampling at regular intervals?

MR. TUCKER: We do not have any, what you might call routine sampling program of all of our effluents. Where we feel we have a problem that necessitates sampling to determine the source of the problem or the magnitude of the problem, we do institute a sampling program. But this is not a routine sampling program for all of our outfalls.

MR. POSTON: You do have facilities that from time to time can make analytical determinations of things like ammonia?

MR. TUCKER: Oh, yes; all of these samples that were taken, in your 1963 report, were split with Great Lakes Steel, and we did exactly the same analysis that you did.

MR. STEIN: Did it come out the same way?

MR. TUCKER: We didn't complain (Laughter).

MR. POSTON: I think that is all I have.

MR. STEIN: This is an excellent report, as we always get from your company, Mr. Tucker.

There is one question that I have, and this is a fundamental one, and I wonder if we can get to this, and this is whether the requirements--I don't know whether I would call them standards, but I think we are talking about the same things--the requirements recommended in the Federal report are attainable?

Now, I wonder if it would be helpful, Mr. Oeming--we have Mr. Hayse Black here--if we could possibly hear his judgment on that, and try to arrive at a conclusion after a brief comment.

MR. OEMING: All right.

MR. STEIN: Mr. Black, you have heard this report. Do you think we could have your comment briefly on whether these requirements in the Federal report are attainable; and then we will let Mr. Tucker respond to whatever you may want to report.

STATEMENT OF HAYSE H. BLACK, INDUSTRIAL WASTE CONSULTANT FOR THE PUBLIC HEALTH SERVICE

MR. BLACK: I am Hayse Black, Industrial Waste Consultant for the Public Health Service.

I, too, have enjoyed listening to this report. At one time I was quite familiar with the operations at this plant.

Mr. Chairman, may I preface response to your request with a brief statement here? We are confronted with an attempt to use some values which will help us protect the receiving waters. We have been talking about effluent standards, and it is pretty difficult to divorce them from stream standards.

Some fifteen years ago, the International Joint Commission set up some objectives based on what this group thought, and I refer to a technical advisory board--what this board thought was necessary in the streams, and they suggested taking samples after initial dilution, which meant some distance below the outfall.

The findings in this report have gone a little further and attempted to translate some of those objectives into effluent criteria.

H. H. Black

These values that have been recommended would have to be used with engineering judgment. We are not told here where these samples will be taken, except they are referred to as effluent requirements.

The statement in the report is rather clear in that it says these are not attainable. Having just received this report, I haven't been able to make computations, as the author of the report has. Admittedly, 20 parts per billion phenol is pretty severe. The place where you take your sample, however, that, presumably, would be the effluent of the outfall to the river from this part of their plant, and if it develops that this value is too low for the dilution in this outfall for them to meet with all known methods of phenol recovery, we will just have to accept it.

On the other hand, that doesn't mean that this can be applied to other sources of phenol. That's where I would like to point out that these values must be used with some engineering judgment. If we will have to go back to do a job, we must go back to the process that we are using -- in this instance we are talking about phenol, the dephenolization processes that are used at Great Lakes Steel, benzol extraction, to be specific. At one time they were using this effluent from their benzol extraction to quench coke. I think you said they were still doing that.

MR. TUCKER: That's right.

MR. BLACK: Which is taking two methods here to reduce phenol, which is commendable.

Now, if they are using two methods to reduce phenol and you still can't meet this 20 parts per billion, then I would hope that our control agencies would take cognizance of what they have done in this instance and act accordingly.

Now, I haven't given you a firm answer as to whether these are attainable or not, and I don't think anyone else can, without making some computations.

I would hope that these comments might apply to some of your future participants here, because this question may come up again. What we are confronted with here is an attempt to translate stream criteria back to effluent criteria, and values have been used that would apply pretty much across the board, and that is not easy. This means that each case will have to be considered individually, and certainly we can expect, if these are recommended, these values to serve as, shall we say, a goal--the word "objective" has been used; most of us don't care for the word "standard"--it means the same thing, but I would hope that in our effort now to use these criteria, that we bring into the picture in every case the dilution that is afforded in the outfall, along with the facilities that have been provided, and, as has been pointed out admirably here, with some of the best known facilities at this time, and they are still trying to improve.

But to give you a dogmatic answer as to the feasibility of complying with these effluent criteria is more than I would care to give in a dogmatic answer.

MR. STEIN: Mr. Oeming, do you have a question?

MR. OEMING: I pass.

MR. STEIN: Mr. Tucker?

MR. TUCKER: I would like to comment, first, to the effect that Mr. Black is an individual whom I have admired for quite some time as being one of the most knowledgeable people and one of the most knowledgeable control officials in the iron and steel industry of anyone I know.

I think he has made some good points here and I am sure that any standards--and we assume that these numbers would be used as standards, and I realize that an assumption is a dangerous thing to do--would be applied to our outfalls at Great Lakes Steel.

He mentioned the sampling location and the advantage that you can take of dilution, and I have often heard you, Mr. Stein, comment on dilution very emphatically.

Some companies have the advantage of a small number of outfalls. We operate one steel plant that has four outfalls. We can take advantage of dilution where we run into numbers of this type. At Great Lakes Steel, we operate, I believe, 26 outfalls, and in most cases each outfall serves an individual facility, and here we must take the full brunt of contamination, if we shall call it that, and we get very little benefit of dilution.

When we design a new facility also and go to the control officials for approval, we must get approval on the basis of the effluent from that particular control facility, and not necessarily from the effluent going directly into the river.

So, I appreciate the comments that Hayse has made. I agree with them, and I think if these numbers are used as objectives and used with discretion, with consideration for the particular features of a particular plant, that they might be applicable.

MR. STEIN: Thank you, Mr. Tucker. I know you do not speak for the whole steel industry, but I hope the whole steel industry feels that way about Mr. Black, his comments, possibly here, in Chicago, and on the Mahoning.

Are there any further questions at this time?

MR. POSTON: No, I think not.

MR. STEIN: Thank you very much, Mr. Tucker.

MR. OEMING: Mr. Chairman, at this time I would like to provide the opportunity for a statement by the McLouth Steel Corporation. I believe Mr. Robert McLaughlin is here to present a statement.

STATEMENT OF ROBERT C. McLAUGHLIN,
VICE PRESIDENT, PUBLIC RELATIONS AND PUBLIC AFFAIRS,
McLOUTH STEEL CORPORATION

MR. MC LAUGHLIN: My name is Robert C. McLaughlin. I am vice-president, public relations and public affairs, of the McLouth Steel Corporation. That immediately tells you I am not an engineer, but I did not write the portions of this report that have to do with scientific facts and findings. I was thinking to myself, while I was seated there listening to this wonderful report from Great Lakes, "If I ever lose these notes I am really a cooked goose." But inasmuch as we are not quite as well known perhaps as our big and older brother and respected competitor at Great Lakes, I think a brief history of McLouth Steel Corporation may be in order.

We were organized under the laws of Michigan in 1934. McLouth Steel Corporation is engaged in the production and finishing of flat rolled carbon and stainless steel. The corporation is a major producer of such products in the Detroit area, with a capacity to produce 2,530,000 net tons of steel ingots annually.

Its three plants are located at Detroit, Trenton, and Gibraltar, Michigan; and its principal business offices are located at 300 South Livernois Avenue, Detroit, Michigan, 48217.

Until 1948, the Corporation conducted a relatively minor steel conversion business at its Detroit plant.

During 1948, as an initial step toward integrating its operations, the Corporation began the construction of its Trenton plant to house its first primary steelmaking facilities consisting of four electric furnaces with a rated annual capacity of about 500,000 net tons of steel ingots, and hot rolling facilities. The year 1951 was the first year that saw this operation go into production.

Between 1953 and 1955, the Corporation undertook a large expansion program which more than tripled its steelmaking capacity. The bulk of this expansion occurred at the Trenton plant. It included an ore dock, two ore bridges, a blast furnace, a new type oxygen process steelmaking plant with three vessels--which, incidentally, was the first plant of its kind in the U. S.--two additional electric furnaces, a slab heat furnace, a roughing mill, a continuous hot rolling mill, and auxiliary finishing equipment. At the same time, the Corporation constructed a new plant at Gibraltar to house a four-stand tandem cold reducing mill. This facility was first operated in 1955. Other major equipment at Gibraltar now includes annealing furnaces, two temper rolling mills, and the necessary finishing equipment--which was added from time to time, a hydrochloric acid pickling line--first operated in 1963.

During 1957 the Corporation undertook a second major expansion program which included a second blast furnace, a sintering plant, additional oxygen process steelmaking equipment, and an ore dock extension. Most of this expansion program also occurred at our Trenton plant.

The Corporation does not operate coke ovens. Coke for use in the blast furnace is purchased from outside sources.

For a brief description--and this will be brief--of waste treatment facilities at the Trenton Plant:

The Trenton plant's combined total contaminated water presently averaging 18,500 gpm flows to a waste treatment plant located at the southeast corner of the property.

The water first passes through a series of three trash screens and three grit chambers which are operated in parallel. The grit chambers have mechanical scrapers and oil skimmers.

Effluent from the grit chambers passes to two parallel mixing chambers which are equipped with underflow and overflow baffles. Pre-neutralized waste sulfuric acid pickle liquor is introduced in this section. Four mechanical mixers and an air blower provide aeration and disperse the sludge into the total water flow.

The water flow is then split to pass to the center well of three final clarifiers. A coagulant aid is added at these wells at the rate of 0.6 ppm to aid the settling of solids. Tanks are provided with oil skimmers, and the clear well at the outlet has a belt-type oil skimmer.

Oil skimmed at the grit chambers and at the final clarifiers is pumped to a decanting tank. Oil collected in this tank can be centrifuged for use as boiler fuel or can be shipped from the plant by truck transportation.

GIBRALTAR PLANT:

The Gibraltar plants' contaminated wastes are collected in two separate sewer systems. Discharge of soluble oil wastes are directed to a large holding pond which has sufficient holding time to allow the oil emulsion to break and the oil rises to the top where it is skimmed off. Effluent from this pond passes to a second settling pond and then to a skimming pond to recover any remaining oil.

The second sewer system collects all other contaminated waste in either of two primary holding ponds. Each pond has an 84-hour holding capacity. Caustic soda is added to control pH as directed by an automatic pH control system. The holding ponds have sufficient capacity to protect against hydrochloric acid contamination which can result from pipe breakage or other accidents.

Overflow from the primary pond enters a secondary settling pond which empties to the skimmer pond before entering Frank and Poet Drain.

Mr. Chairman, I would like to call attention to--and I won't take time to review it here--page number 6 of this report, which contains detailed descriptions of our water clarification installations and the time when they were installed.

MR. STEIN: That will be included in the record as if read.

MR. MC LAUGHLIN: Thank you, sir. I would like to say that this equipment described in detail represents a capital investment of several million dollars plus costly maintenance and operating expenses.

GENERAL COMMENTS:

We believe that the limits on the operation of the Corporation's water clarification system as prescribed by the Michigan Water Resources Commission are as stringent as it is possible to meet today. With considerable effort and the expenditure of large sums of money we have been able to substantially meet those limits. Further improvements can be made only as adequate equipment can be built following the advancement of technological developments in this area.

The oil concentration limits proposed by the U. S. Department of Health, Education and Welfare are acceptable and satisfactory. Their recommendations on limits of iron concentration are also reasonable and acceptable. We believe that the recommended limit, which was discussed by the representative of Great Lakes, of 35 mg/l on total suspended solids is completely impractical. Today's manufacturers of water clarification equipment will not guarantee less than 85/l and at the present time there is no possible way of meeting this requirement. In our judgment the limit of 5 mg/l on settleable solids is also impractical.

While we are in no position to comment on the report other than the information which concerns our Corporation, we do take serious exception to some obvious errors or misstatements regarding McLouth Steel Corporation. The report states that a substantial quantity of phenols are passed into the river by McLouth. We do not own nor do we operate a coke plant. The only phenol in the waste water from the Trenton plant would be that remaining in the coke charged to the Blast Furnace. This, of course, is a very insignificant amount.

The report also condemns the Corporation concerning oil contamination. Records which have been maintained since 1961, and are on file at the Michigan Water Resources Commission offices will show this accusation to be incorrect. The water clarification system at the Trenton plant has been operating under a Supplemental Order of Determination of the Commission since January 1, 1961. Monthly statements showing daily operating results have been submitted to the Commission since that date. The records indicate that there was accidental discharge of oil to the river only twice during this period which covers 38,280 operating hours. The two discharges were less than one hour each. These records also show that the suspended solids returned to the river have been reduced by 80 per cent during this period.

The Gibraltar plant has successfully operated 99 per cent of the time within the limits established by the Michigan Water Resources Commission. Infrequent failures to meet these limits have occurred because of pipe or tank defects allowing acid and ferrous chloride to enter the Frank and Poet Drain. The treatment system was changed in May of this year. Accidental loss of this material can now be contained and treated before it is released. We do not anticipate any further failures of this type to occur again.

We believe that we at McLouth Steel Corporation have accomplished satisfactory results and we take great pride in our water clarification system. It was constructed at the time the original plant equipment or subsequent new plant equipment was installed, and it was designed and constructed in cooperation with the Michigan Water Resources Commission. The water clarification equipment installed at our Trenton plant is as modern and the operation as advanced in technology as is known today.

We have received the utmost cooperation from the Michigan Water Resources Commission and their expert advice has made it possible for much of the progress which we have been able to attain. The Corporation has made every effort to operate the equipment within the limits established by the Commission and intends that the operation will be further improved as new technological advances are developed.

It has always been McLouth Steel Corporation's policy that industry has a full moral requirement not to pollute the natural waters of our land. We intend that this policy will be maintained and we are hopeful and anxious that improvements in the system will continue.

We welcome the opportunity to comment on the report submitted by the U. S. Department of Health, Education, and Welfare, and assure our cooperation in any further information that may be required.

Mr. Chairman, thank you very much.

Robert C. McLaughlin

WATER CLARIFICATION INSTALLATIONS

TRENTON PLANT	WHEN INSTALLED
1. 90' Dorr Thickener	August 23, 1954
2. Filter #1	August 1, 1958
3. 2 - 75' clarifiers	Nov. 30, 1954.
4. Acid Treatment System	April 1, 1957
5. Recirculating System - Oxygen Process Furnace #1	May 15, 1958.
6. Recirculating System - Oxygen Process Furnace #2	May 15, 1958.
7. Filter #2	January 15, 1960.
8. Lime addition system	May 30, 1959.
10. 8 centrifuges & Dorr thickener	May, 1961.
11. Modification to centrifuges	Nov. 5, 1962.
12. Drags for grit chambers	August 1, 1963.
13. Covers over thickeners	Nov. 15, 1963.
14. Oil Skimmer clarifier Clearwell	June 18, 1965.
15. Grit chamber flight sprays	Under construction.

GIBRALTAR PLANT	WHEN INSTALLED
1. Roll coolant recovering system	September, 1961.
2. Roll coolant recovering system	July, 1963.
3. 32,000,000 gallon lagoon	1955
4. Remodeling of above lagoon	1957
5. Oil skimmer	April, 1957.
6. Caustic tank	September, 1963.
7. pH control	September, 1964.
8. Waste treatment system	Under construction-to be completed July 7, 1965.

NOTE:

This equipment represents a capital investment of several million dollars plus costly maintenance and operating expenses.

MR. STEIN: Thank you, Mr. McLaughlin.

Do you have any questions?

MR. POSTON: I was going to ask whether there are surveillance procedures in effect at McLouth Steel to determine the effectiveness of the treatment at all times.

Mr. Tucker indicated that Great Lakes looked at their effluents every two hours. Does McLouth have practices in that regard?

MR. McLAUGHLIN: Yes. I think Mr. Oeming could answer that question better than I. But, we have very detailed surveillance, don't we?

MR. OEMING: That is correct, Mr. Poston; there are reports submitted monthly.

MR. POSTON: Thank you.

MR. STEIN: Do you have any questions?

MR. OEMING: No, I have no questions.

MR. STEIN: Thank you, Mr. McLaughlin.

Mr. Oeming?

MR. OEMING: At this time I would like to call upon the Ford Motor Company. Mr. Frank Kallin, I believe, has a statement to make.

STATEMENT OF FRANK KALLIN

FORD MOTOR CORPORATION

MR. KALLIN: Mr. Chairman Stein, Mr. Poston, Mr. Oeming, and members of the Water Resources Commission:

My name is Frank Kallin. Our report is going to be in the form of a letter, and the letter is signed by Mr. C. A. Dunlap, director, plant engineering office, and it is directed to Mr. Oeming.

FORD MOTOR COMPANY
PLANT ENGINEERING OFFICE
THE AMERICAN ROAD
DEARBORN, MICHIGAN

June 10, 1965

Mr. Loring F. Oeming
Executive Secretary
Michigan Water Resources Commission
200 Mill Street
Station B
Lansing, Michigan

Dear Mr. Oeming:

Thank you for your letter of May 10, 1965, regarding the reconvened public conference beginning on Tuesday, June 15, 1965, at the Detroit Institute of Arts. We at Ford Motor Company appreciate this opportunity to comment on the proposed Public Health Service Report.

We believe that over the years Ford Motor Company has demonstrated its sincere concern with the preservation of water resources. For example, the Company has spent more than $5 million for the installation of waste treatment facilities in the Rouge and Monroe Plants alone, including blast furnace thickeners, oil removal clarifiers, a final cooler, recirculation system for the control of cyanide from coke oven operations, a well for underground disposal of phenol bearing wastes and extensive oil skimming devices at the head end of our Boat Slip in the Rouge Area. At our Monroe Plant, a most complete water and waste treatment plant was constructed in 1950 and was increased in size in 1956.

In addition to the equipment mentioned above, the Company puts emphasis on a constant program of "good housekeeping" and maintenance aimed at reducing pollution at the source. In this connection, the Company has voluntarily taken steps to purchase degradable detergents in order that the nuisances resulting from detergent foam will be minimized.

Ford Motor Company's interest has been further demonstrated by its wholehearted cooperation with the various Federal and state agencies to provide basic data on various industrial operations. Typical are the cooperative studies with the Public Health Service and the Michigan Water Resources Commission including extensive detailed surveys of operations at our coke ovens and by-products plants in order to obtain waste characteristics.

which could be compared to operating experiences at other similar coke oven operations.

In considering the Public Health Service Report, we find a number of points to which exception might be taken. Our objective, however, is to be constructive. Therefore, in making our observations, we do not seek to be argumentative but only to keep the problem and our efforts to solve it in proper focus.

In evaluating the Report, we have utilized the Water Resources Commission Staff reports on waste water surveys made at our Rouge Plant which were submitted to us under date of July 2, 1964 and July 22,1964 and also the Staff reports on waste water surveys made at our Monroe Plant which were furnished to us under date of July 1, 1964 and November 8, 1964. In essence, these reports included the analysis of the 24-hour composite samples taken at various outlets from the Rouge Area and the Monroe Plant.

First,considering potential oil losses at the Rouge Plant, on page 176 of the "Findings" which support the Report, it is stated that "Ford Motor Company discharges 900 gallons per day (of oil) which can often be observed as a thin film on the water surface of the Rouge River." At the same time, on page 41 of the Report, the

Public Health Service appears to support an oil removal limitation in the effluent of 15 mg/l which would represent approximately 5,000 gallons of oil per day in the total waste water flow from Ford Rouge operations. Ford's daily discharge of oil as alleged in the report is, accordingly, far below what would be permitted by a standard of 15 mg/l, and yet the Report indicates dissatisfaction with present oil loss conditions in the Rouge River. We believe this apparent conflict illustrates the weakness of applying a specific oil effluent limitation to determine the adequacy of oil waste control, and that the method under which the Michigan Water Resources Commission now evaluates the adequacy of oil waste treatment facilities, namely continuous visual surveillance by helicopter and by boat is a superior method. The application of standards in terms of parts per million to oil losses, regardless of what proportions may be made, is in our view unworkable and unlikely to achieve the results desired by the regulatory authority.

It should also be noted that since the Michigan Water Resources Commission and the Public Health Service surveys were made in 1963-4 (which formed the basis of the Public Health Service Report), a greatly improved oil recovery system has been completed and placed in operation at the north end of the Ford Boat Slip in the Rouge Area. This type of installation is a first of its kind, and its operation to date has been most successful.

As we have previously advised the Michigan Water Resources Commission, we are presently engineering the installation of an additional skimmer and oil recovery unit to be located upstream of the Schaefer Road bridge on the Rouge River. Some of the equipment has been ordered, and it is anticipated that this facility will be in operation by the first of September this year. This device is designed to collect residual oils which come from the effluent of our oil removal facilities just west of Schaefer Road and also to collect oil which may come down the Rouge River from properties and operations upstream of the Ford Rouge Plant.

In order to improve further the operation of the oil recovery system at the north end of the Ford Boat Slip, collection facilities and an additional treatment tank are being provided in our Dearborn Engine Plant. They will collect and treat all spent soluble oil and washer solutions and remove emulsified oil before the water phase is discharged to the Dearborn Engine Plant sewer system. We believe that the amount of oil passing under the skimming device at the north end of the boat slip is minimal, but undoubtedly the treatment of spent soluble oil and washer solutions will further improve the oil control program in the Rouge Area.

Turning now to steel pickling liquor (iron concentrations), it is our view that any reductions should be made in conjunction with a change in the basic pickling process. Alternative means such as attempting to neutralize pickling liquor with lime or lime derivatives result in sludge disposal problems impractical at the Rouge Plant. The two 24-hour surveys we have previously mentioned indicated a total plant loss of iron of 13,861 lbs. and 24, 536 lbs. respectively. The Public Health Service's recommended limitation of 17 PPM (page 41 of the proposed Report) would permit a total discharge of iron over a 24-hour period of 56,712 lbs. in the Rouge Plant effluent, or more than twice that actually discharged. At the present time, Ford is reviewing the feasibility of changes in its pickling process. Based on preliminary engineering information available at this time, it is believed possible that changes may be developed which will reduce the amount of spent pickling liquor discharged to the Rouge River substantially.

Insofar as suspended and settleable solids from Rouge area operations are concerned, we do not consider this to be a major problem in view of the particular location of the Rouge Plant and the minor effect on Rouge River dredging. The Ford Motor Company's computed contribution to the total Rouge River dredging represents only 17% of the total volume of dredge material removed each year by the U. S. Corps of Engineers. Nevertheless, we expect to reduce the amount of this material appreciably as a result of proposed process changes in certain manufacturing operations in the Rouge Area.

For example, proposed process changes at the Dearborn Glass Plant will result in a substantial reduction of sand discharged to our boat slip (which incidentally, is owned and maintained by Ford). This change is part of a long range program and will be completed by approximately the year 1969.

Insofar as phenol and ammonia are concerned, our Steel Division management is reviewing possibilities to reduce further the amount of these chemicals resulting from coke oven operations in the Rouge Area. We should point out, however, that the total pounds of phenol from these operations are well below the 600-pound limitation stipulated by the Michigan Water Resources Commission and, contrary to the statement in the Report, do not exceed this limit.

Turning now to the Public Health Service's recommendations with respect to our Monroe Plant, we believe that the proposed limit of .025 PPM of cyanide is entirely too stringent. For the past 8 years, we have been operating our Monroe facilities within a limitation of 1 PPM and, insofar as we have been able to determine, this concentration has not had any adverse affect on the Raisin River or Lake Erie. We appreciate, however, that it may be advisable to consider a reduction of the 1 PPM to a lesser amount at such time as further improvements are made in the Raisin River upstream from this plant. But because of this plant's particular location in a heavily industrialized area at the mouth of the Raisin River at Lake Erie, this limitation in our judgment should not be less than .3 PPM. In our opinion, this concentration would not have any adverse affect on the Raisin River and Lake Erie--particularly if imposed at the point of outlet so that the actual concentration in the Raisin River would always be less than .3 PPM.

Regardless of these considerations, a significant process change will be made in the plating process at Monroe which will further reduce the total pounds of cyanide from this plant.

On page 52 of the Report, it is stated

that "The effluent from the Company-owned sewage treatment plant (at Monroe) is not chlorinated." This is incorrect, because the effluent is and has been chlorinated for 365 days a year. Also, the statement that "The quantity of oil released to the Raisin River through a dilution canal outlet is excessive even though the concentration remains below 15 mg/l" is unrealistic because it does not recognize that the Lake Erie water entering this plant includes other soluble materials (oil, etc) approaching or exceeding 15 mg/l.

Again, Ford Motor Company appreciates the opportunity to comment on the Public Health Service Report. The problem of pollution is important and complicated. Progress toward solution will depend upon good will, common sense, and perseverance. Ford Motor Company will continue to do its part.

Very truly yours,
T. A. Dunlap, Director
Plant Engineering Office

MR. STEIN: Thank you. Are there any comments or questions of Mr. Kallin. Mr. Poston?

MR. POSTON: Mr. Kallin, what is the Ford Motor Company policy relative to sampling and analysis of waste effluents?

MR. KALLIN: Well, at our Monroe plant, for example, we have operators 24 hours around the clock. In other words, the operators who have the chemicals, and so forth, so it is a continuing program.

MR. POSTON: Do they make a daily analysis of effluents?

MR. KALLIN: Yes, sir.

MR. POSTON: Do you know the particular tests?

MR. KALLIN: Well, cyanide, chrome, either soluble or oil; that is about all I can think of, offhand.

MR. POSTON: I think that is all I have.

MR. STEIN: Do you have any questions, Mr. Oeming?

MR. OEMING: No questions.

MR. STEIN: Thank you very much, Mr. Kallin, for your statement.

At this time we shall recess for ten

minutes.

(Whereupon a short recess was taken.)

MR. STEIN: May we reconvene? Here is the tentative schedule that we are thinking of having: We are going to try to push ahead as much as we can this afternoon. The best indication is, if we do not get all completed this afternoon, we shall reconvene in the lecture room here at 9:30 tomorrow morning.

Now, I may change that if we have quite a bit tomorrow when we come to the end of the day, and move that time up.

About noon we expect to get through with all the presentations, and the discussion among the conferees. Then we shall recess for lunch sometime in the afternoon, and we shall be able to announce at the noon recess tomorrow when the conferees will reconvene again, and then the conferees will have an announcement for you on the conclusions, and where we go from here.

Mr. Oeming, will you call the next person, please?

MR. OEMING: Mr. Chairman, at this time I would like to introduce for the record communications received by me from this conference, from the Allied

Chemical Corporation Plastics Division, the Allied Chemical Corporation Solvay Division, and the Allied Chemical Corporation General Chemical Division.

I shall leave these with the recorder here and with your permission I would like to have these entered into the record.

MR. STEIN: They will be entered into the record as if read.

PLASTICS DIVISION
ALLIED CHEMICAL CORPORATION
DELRAY P. O.
DETROIT 17, MICHIGAN
VINEWOOD 2-4400

May 27, 1965

Mr. Loring F. Oeming
Executive Secretary
Water Resources Commission
Michigan Department of Health
200 Mill Street
Lansing, Michigan 48913

Dear Mr. Oeming:

This is to advise you of the actions taken and facilities provided at the Detroit plant of Plastics Division, Allied Chemical Corporation, in the past for pollution control. The current effluent at such plant, as you know, meets with the approval of the Commission's staff (1), and as noted by the USPHS in their April 1965 report does not interfere with current uses of water from the Detroit River or Lake Erie.

To date, some $250,000. in capital has

been expended by us at said plant to install control facilities, which is a substantial investment for such a small operation. In addition to normal containment equipment and segregation of process waste streams from cooling waters, the plant is equipped with a solvent dephenolizer for treating process wastes and with an oil-water separator for handling the combined process-plant drainage discharge. The dephenolizer is removing 99.6% of the phenolics from the process wastes. These phenolics along with tars and oils recovered by the separator are returned to process.

Operation of these facilities is costing us about $24,000 per year in direct operating expenses as well as services, such as laboratory control. This routine control includes automatic proportional sampling and flow recording of the treated plant effluent, with frequent visual inspection of the discharge. This proportioned sample is analyzed daily for critical waste constituents to maintain a close monitor of the effectiveness of the control facilities. In addition the dephenolizer process streams are checked daily for phenolic content and used as control for the adjustment of operating variables to maintain its high efficiency.

Note: (1) Ltr. RWP/OGU, dated 6/4/64.

We continue to strive for further gains in pollution control through a never ending program of employee education to the necessity of in-plant control over process losses and the maintenance of good housekeeping practices. You may be assured this program of necessary control over what the plant discharges will continue.

Very truly yours,

O. G. UITTI

Works Manager

OGU:dp

SEMET-SOLVAY DIVISION
ALLIED CHEMICAL CORPORATION
P. O. BOX 58
DETROIT, MICHIGAN 48231
PHONE 842-4400

June 10, 1965

Water Resources Commission
200 Mill Street
Lansing, Michigan 48913
Attention: Mr. Loring F. Oeming
Executive Secretary

Dear Sirs:

Reference is made to the Commission's letter dated May 10, 1965 enclosing a copy of the report of the U.S. Department of Health, Education and Welfare, Public Health Service on pollution in the Michigan portion of the Detroit River and Lake Erie.

It is noted the Report states as follows with respect to this Company's Detroit plant:

"Wastes discharged from this source, with the exception of oil discharges as reported by the Michigan Water Resources Commission, were not found to interfere with existing water uses in the Detroit River or Michigan Lake Erie." (Summary, page 40)

This favorable situation was brought about by the expenditure prior to 1962 of substantial amounts of money to control our plant effluent.

It should also be noted that the discharge of oil is not inherent in the plant processes and improvements in our regular program of good housekeeping and testing of effluent have been effected to avoid chances of malfunctioning and accidental discharges.

In the report of the Joint Federal-State Conference of March 27-28, 1962, control of wastes at this plant was rated as adequate. The survey conducted by the Commission in April and May, 1963, showed a reduction in phenol discharge of more than 99.9% from a previous survey made in 1955 and that no significant amounts of any pollutants were being discharged. Following this survey and by letter of July 8, 1963, the Commission advised that the plant had been placed in classification A. In letter dated February 18, 1964, the Commission commented on our "very impressive record."

It is requested that this statement be

attached to and incorporated in the record of the reconvened public hearing to be held during the period June 15-17 at the Detroit Institute of Arts.

Respectfully submitted,

A. J. Kussling

Plant Superintendent

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL CORPORATION
800 MARION AVENUE
RIVER ROUGE 18, MICHIGAN
VINEWOOD 1-4460

June 11, 1965

Corrected Copy

Water Resources Commission
State of Michigan
200 Mill Street
Lansing, Michigan 48913
Attn: Mr. Loring F. Oeming, Executive Secretary

Dear Mr. Oeming:

With reference to your letter of May 10, 1965, we thank you for sending us a copy of the full report of the U. S. Department of Health, Education and Welfare, Public Health Service, on the pollution in the Michigan portions of the Detroit River and Lake Erie. The report is quite exhaustive and will undoubtedly be of great value to your continuing control program.

In a report of this magnitude it is understandable that errors and omissions may occur. Since we have observed several with respect to reported data covering operations of this Company's Detroit Works, we request that this letter and all attachments be incorporated in the proceedings of the June 15 public conference and made a part of the record thereof. Specifically, we should like to make the following points:

(1) On page 7 of the "Findings", in the section on "Sampling Analysis", we can find no mention of the change in procedure for analyzing C. O. D. (Chemical Oxygen Demand) in waters, which change we understand was made by the USPHS at Grosse Ile sometime during the middle of 1963. The difficulty with the original analyses, as we understand it, was one of chloride interference, which gave erroneously high C. O. D. results. Accordingly, although C. O. D. results obtained before such change were known to be highly questionable, in the case of our Detroit Works, the C. O. D. range is listed in Table 9-V with no indication that the results may well be incorrect. Attached are copies of letters to the writer from Mr. R. W. Purdy, Water Resources Commission dated January 24, 1964, and February 25, 1964, and my letter to Mr. Purdy dated February 21, 1964, summarizing this sit-

uation. Undoubtedly, this same inaccuracy applies to other industries along the River.

(2) In Table 9-V of the "Findings", we question some of the other results reported for contaminants in this Works' effluents. It should be pointed out that practically all of these concentration figures are the results of just two 24-hour composite samples of our two effluent sewers and one raw water intake. It is most misleading to report concentrations of contaminants in plant effluents without showing similar contaminant concentrations in intake raw water. For example, range of suspended solids in our Works' effluent is shown in Table 9-V as 22-79 ppm. However, in the raw water feed, the range of the same contaminant was 18-46 ppm. In one of the two 24-hour surveys, our total plant effluent contained 1120 lbs/day less suspended solids than that entering the plant in the raw water feed. It seems inconsistent, therefore, that in Table 10-V, the average daily loading from our Works to the River is shown as 1135 lbs. suspended solids, which we assume was derived by totaling one 24-hour survey's result of 2270 lbs. suspended solids and, instead of crediting the Works with removing 1120 lbs. of suspended solids during the second day's survey, a figure of 0 was used, thus yielding the average of 1135

lbs. The correct figure, in our opinion, should be 575 lbs/day suspended solids. Applying this same procedure, the chlorides figure in Table 10-V should be 285 lbs/day, and not 456 lbs., as reported.

(3) Another example is the range for phenols, shown as 5-62 micrograms per liter. This plant has no phenol discharges whatsoever, so that if these analyses were correct, the phenol concentrations must have been in the raw water feed.

(4) Also in Table 9-V, we question the range of acid concentrations shown as 8-1050 mg/liter. The pH range shown is 5.8-7.7. It is quite obvious that the acid classification as indicated is ambiguous. We believe it would be impossible for the effluent to contain free sulfuric acid in concentrations of 1050 mg/liter, which is 0.105%, and yet have a 5.8 pH. The two 24-hour composites showed a pH range of 6.9 to 7.2 and reduced alkalinity (or acid) of 6 to 60 mg/liter in the case of two sewer sample composites and an actual increase in alkalinity range of 4-6 mg/liter in the case of the other two sewer composites.

We appreciate being given the opportunity to submit the above for the record. You may be assured of our sincere interest and continued cooperation in the Water Resources Commission's water pollution control program.

Yours truly,

C. W. Albin

Superintendent

CWA/jw

Attach:

MR. OEMING: Now I would like to afford the Allied Chemical Corporation, Solvay Process Division, the opportunity to present a statement.

I think the statement is to be presented by Mr. Von Frank.

STATEMENT OF A. J. VON FRANK,
ALLIED CHAMICAL CORPORATION

MR. VON FRANK: Mr. Chairman, conferees, and guests:

My name is A. J. Von Frank. I am employed by Allied Chemical Corporation as a specialist in industrial wastes and in water quality matters.

As stated by the Chairman, statements of each of the three plants have been submitted for the record. I think the performance of those three plants--

MR. STEIN: Can you hear him back there?

VOICES: No.

MR. VON FRANK: Solvay Process Division of Allied Chemical Corporation operates an alkali plant at 7501 West Jefferson Avenue, in Detroit, Michigan. Boundaries of the property include both the Detroit and Rouge Rivers.

Its major product is soda ash (chemical name - sodium carbonate), a basic heavy tonnage chemical of industrial importance, used in the manufacture of glass, in cleaning compounds, as the major industrial alkali and a host of other uses. Because of the low cost of its product, 1.5-2 cents per pound, producing facilities are invariably located close to sources of raw materials. Soda ash exists in the natural state as "trona" in some of our Western States, notably Wyoming. Because of this developing supply, no price advances have been possible for eight or nine years to accommodate rising costs for the manufactured product.

The plant produces soda ash by the standard Solvay ammonia-soda process. The basic raw materials used are:

(1) Salt (ordinary sodium chloride) which is pumped as brine from Canada.

(2) Limestone.

(3) Weak ammonia liquor from coke oven operations elsewhere.

Soda ash is made by adding ammonia and carbon dioxide to salt brine from which sodium bicarbonate precipitates. The bicarbonate is filtered and converted to dry soda ash by heat. The ammonium chloride solution from the filters is distilled with lime for the recovery of ammonia which is recycled in the process. Both the lime and carbon dioxide used here are produced by burning limestone in kilns.

A. J. Von Frank

Waste liquors from the distillation step constitute the most important single waste from the manufacturing process. This waste represents 2 million gallons of effluent per day. It contains all the chlorides in the original brine, the calcium which had been used to free the waste of ammonia in the distillation step, and the settleable and suspended inert solids.

Approximately 15-20 MGD of cooling water is pumped from the Detroit River for cooling purposes, and is returned there after one pass through its own cooling water sewer system. The total number of outfalls into the river system numbers eight including those for the process wastes. The enormous variation in concentration reflected in Table 9-V (which is after page 176 in detailed USPHS report, entitled "Findings"), which might be construed as disorderly control, in reality reflects analyses of the essentially clean used cooling water on one hand and maxima for process wastes on the other.

Segregated sanitary sewage is discharged into the Detroit sewerage system.

The problems with the 1-2 MGD process waste effluents as stated on page 38 and page 40 of the USPHS Summary Report, which covers discharges into the

Upper Detroit River and into the Rouge River from the Solvay Plant, are:

1. Suspended and settleable solids
2. Chlorides;

and by that I mean the sum of the suspended and settleable solids.

Relative to separable solids content in wastes from this plant, the record should reflect that they are now about 10 per cent of what they were in 1947 when the USPHS also surveyed the river. The earlier report refers to "suspended solids" only and comparative data show:

	1947 lbs/day	CURRENT lbs/day
Suspended Solids	1,228,000	130,000

Most of this reduction occurred before 1954 and reflects production dislocation to some extent, but also reflects attention directed at this recognized problem by the plant.

The solids discharged are composed mainly of calcium carbonate with lesser quantities of calcium sulfate, magnesium hydroxide and sand. As such, they are not dissimilar to some natural sources of separable solids in many streams throughout the county. They present no health hazard.

Up to the time of this conference, there has been no reason to believe that the quantity of separable solids discharged from Solvay's plant represented any significant interference with water use within reasonable distances from the outfall. Because of the 90 per cent decline in separable solids in the 1950's, this company felt it has been operating in a responsible and satisfactory manner. If it is the judgment of this conference that further abatements are essential in the broad public interest, then this company, of course, is willing to comply within the limits of technical and economic feasibility.

The recommendations of the Summary Report are for removal facilities capable of producing an effluent with maximum concentrations of (a) 35 milligrams per liter of suspended solids, and (b) 5 milligrams per liter of settleable solids. We are not in a position at this minute to estimate capabilities in approaching these rigorous standards, which, when related to current effluents would require better than a 99.5 per cent removal. We are in the process of initiating the appropriate technical and feasibility studies.

Relative to the chloride content of the process wastes, we concur with the judgment expressed on page 10 of the USPHS Summary Report that current chloride concentrations are not yet significant enough to cause major interference with water use, although future action may be necessary to prevent an undesirable situation. The reasoning behind this assessment, of course, is related to the results of the USPHS survey which show chloride levels in the Detroit River substantially below the concentrations at which concern is expressed for the quality of drinking water and for corrosion of steel surfaces in industrial operations. Average values are reported as ranging from 9-69 mg/l at the mouth of the Detroit River. USPHS Drinking water standards show a value of 250 mg/l above which tastes may occur. There is little industrial concern about life of steel equipment in relation to waters containing less than 50 mg/l of chlorides.

The USPHS expresses a proper concern about an over-all increase as a potential problem in the public waters. For perspective, the record should show that chlorides from Solvay's operations have substantially decreased in the same base period. The report on the 1947 USPHS survey--which, incidentally is referred to elsewhere as the IJC survey; I believe the Public Health Service did the field work--of the plant's effluent compares as follows:

	1947 lbs/day	CURRENT lbs/day
Chlorides	2,646,000	690,000

Sales dislocations have been responsible for most of this, though improved plant practices and housekeeping has contributed to this reduction, mostly accomplished by 1954.

The Summary Report recommends (pp. 38 and 40) "The industry begin investigation of satisfactory methods of disposing of chlorides and alternate methods of disposal of concentrated brines, such as subsurface disposal."

We accept this direction willingly, but in fairness to the national soda ash industry and for the record, I should state the problem has been receiving considerable technical attention for over ten years. A number of investigations have been pursued along the lines of recovering a useful by-product that might recover some of the costs of treatment. These include cement additives, snow melting compounds, use for hygroscopic purposes, etc. None, to date, offers promise as a route for other than a small fraction of the waste available. This matter is reflected in a report entitled "Report on wastes from the Soda-Alkali Industry in Response to a Request from the N.T.T.C.I.W." and is dated August, 1961.

Relating to the pace at which the potential problem of chlorides in water may approach us, consideration must be given to the fact of the developing "trona" source which acts as a strong depressant on any growth of the manufactured variety.

Thank you. That concludes the statement.

MR. STEIN: Thank you very much.

Mr. Poston?

MR. POSTON: I have no questions.

MR. STEIN: Mr. Oeming?

MR. OEMING: I have no questions.

MR. STEIN: Mr. Von Frank, this industry of yours fascinates me. I guess that 1961 report might have been written in answer to us. The thing that always puzzles me is that we have these dislocations of marketing, and when we talk about a byproduct that might use up some of the salt, the indication is that the marketing potential is limited because the product is so heavy that once you transport it out of your immediate marketing area there is a competitor there who can beat your price.

Then you speak about the "trona" salts,

which presumably has to be taken all across the country. How does it compete with Cape May or in Saltville, Virgina, and so forth? If you have a limited marketing area because of the weight of the material and your transportation costs, how does the trona salts out in the West represent a danger?

MR. VON FRANK: I think there is a very simple answer to that, Mr. Stein, and it is the simple fact that the cost of transportation plus the cost of mining equals what the manufactured variety can do, delivered within a reasonable distance from the plant.

Now, this admittedly, almost every one of these situations is peculiar to the precise product that we are dealing with. I thought I detected a little sense in your remark about generalizing on this.

There have been many instances where the reverse has been true.

MR. STEIN: I am not generalizing on this as far as a marketable product, but there is a limit in marketability. Now, as I understand the industry, here is the problem: In most of the soda ash plants--and, by the way, I am not singling your plant out, because as far as I know every one is the same--most of the soda ash plants are located on a large body of water where you

L. J. Von Frank

can get the raw materials, carbon dioxide, and so forth. The ones that are located on the ocean, perhaps from a pollution point of view, are in the best position with the regulatory authorities, because they put the chlorides in the ocean and they more or less go free. But the point is, none of the soda asn plants do anything with the waste, other than this housekeeping you talked about, that is, with the chlorides which form the waste but discharge them into a water course, for the natural reason that you are in a big water course, as you know. Some of the plants are on headwaters, the small ones, and we do have a big problem with them. The only solution so far we have been faced with is either underground discharge or closing the mill.

Now, I think we may have a problem, as was pointed out, with this increasing chlorides discharge in the area here, faced with an industry like yours, which even though it has cut down, is obviously a large chloride distributor compared to other industries. If really the trade or the state of the art permits no other disposal than a discharge into a water course as a first step, then we may be faced with a real problem. I say this to you not in an "enforce" sense, but in a "resource" sense, and in the sense of something that we all have to work on. I do not like to see the decline of any industry, and I expect that with certain industries such as the coal industry where you have many areas devastated by acid mine drainage, for example, from the long-range point of view, or the pulp and paper industry, where about half their waste goes down the street, I expect your industry is in the same position, that as the country is going to grow and as we are going to have stricter and stricter control inevitably on all sorts of contaminants, it seems to me it behooves the soda ash industry to find some way so that a plant can begin getting rid of its wastes rather than putting it into the stream; because then in spite of that, I am sure the trona market is going to expand and expand and expand.

Again, I think this is an investment that all the people in America have in keeping your industry alive; and I see this over the horizon.

You probably know the plants in other locations where we have real acute problems, and unless your industry does something and has some imaginative break-through on this, we tend to get into very-very sticky situations.

MR. VON FRANK: I do not think you have

said anything really that I or people in the industry would disagree with. They are aware of this. They are aware of the pressure on it; they are aware that this is a contribution of chlorides and ultimately you can get too much. We know this. And certainly the direction and suggestion of Washington is well warranted. I think it is good to do this periodically.

The other side of the coin that I want to address myself to is in the sense of immediate pollution here. I had to read the language at least twice to find out that the statement by the Public Health Service as to these chlorides discharges is not at this minute a pollution problem. It is more of a potential one; and that the wording of the recommendations of the Public Health Service are for investigation to find solutions, which is basically what you said.

MR. STEIN: I think with your industry unless you get a new break-through or an underground discharge, I don't know what we can do, but I do think as I read the investigatory report, it was that there are certain industries which cannot have complaints about the chloride content in the water now, and this does not relate to steel pipe,and -- I think we could ask Mr. Vaughan a question on that. Obviously,where you have concentration of chloride, even as you have in the water going up to 69, that for certain industries while this may not be a danger to water, you may not be able to take it as drinking water. If you had a chemical industry or paper industry that are trying to do something of that kind, you might run into a problem with chlorides of that type.

Now, again, Mr. Vaughan answered that question that he thought that certain industries were not satisfied with the water quality because of this right now, and I don't know how acute that is. But I am not sure that he was just speaking about a potential.

MR. VON FRANK: I realize you do not want to have me on here all afternoon, but just one comment.

MR. STEIN: Surely.

MR. VON FRANK: This business of industrial requirements on water, I think there is a highly mistaken notion.

Obviously, somebody making antibiotics wants extremely pure water, and he will never get that out of a river; there is no industry around, and particularly my own chemical industry, who is ever going to take water out of a stream, no matter how best we put it, mountain stream or otherwise, that does not expect some type of minimal preparation for it; and I could belabor this point for quite a while, and some of the references I am sure that you have in the back of your mind are in that category.

MR. STEIN: No.

MR. VON FRANK: Is it socially proper to bring your water up to such a state that--

MR. STEIN: I think we are in substantial agreement.

MR. VON FRANK: I know we are; right.

MR. STEIN: I think the key phrase here is "minimal preparation." I think minimal preparation is a course, being in municipalities or being in industry. Those industries with special requirements obviously have that.

The question here is a question of judgment again, as are all questions, in knowing when something ceases to be minimal preparation and really is a burden that should be taken care of by the discharger upstream.

Now, again, I just say this to your company: I recognize the problem, but I am sure that unless something happens in the industry as a whole we are going to be in for some really serious trouble.

MR. VON FRANK: Very good; we have got it.

MR. STEIN: Thank you.

MR. OEMING: I would now like to call on Mr. Robert P. Logan.

STATEMENT OF ROBERT P. LOGAN
ON BEHALF OF
SCOTT PAPER COMPANY
DETROIT, MICHIGAN

MR. LOGAN: Mr. Chairman, Conferees and Ladies and Gentlemen.

Eighty-one years ago one of the first chemical pulp mills in this country was constructed near the confluence of the River Rouge and the Detroit River. Eight years later paper machines were added. Pulp and paper manufacture has been carried on there ever since and today this mill, operated by Scott Paper Company since 1954, produces about 250 tons of paper products per day.

The Scott mill at Detroit employs about 700 people and contributes nearly $14 million annually to the economy of the surrounding region, including $1 million spent for pulpwood cut by small independent suppliers in the thumb area of Michigan.

Production of pulp at our Detroit mill is by the so-called Mitscherlich process, one of the first chemical processes used to produce wood pulp. In this process, chips of wood are cooked with calcium bisulfite to dissolve the wood sugar and the lignin, leaving behind the fibers of cellulose. The sugar and lignin are in dilute solution and, in the Mitscherlich process, as we practice it, recovery is not economically feasible.

Now consider the manufacture of paper where large quantities of fiber are pumped, circulated, washed, and formed into sheets. Throughout, great quantities of water are required as the transporting medium. Some of the fiber is extremely small. One consequence of this is that, despite every effort to the contrary, some fiber inevitably remains in the water when it is returned to the river.

Thus, the effluent from the pulp and papermaking processes at our mill contains wood sugars, lignin--which is closely related to the biologically inactive material developed in the spongy floor of a forest--some calcium bisulfite, and wood fiber. If it were economically and technically feasible to recover completely and reuse these materials this would certainly be done. The recovery and reuse of all this waste is no more feasible than is the operation of a household with complete recovery of all waste.

These, then, are the facts of our situation: We operate a pulp and paper mill. Complete recovery of all waste products is impractical. Large quantities of water are used and carry off waste products to the river.

Concern has been expressed as to the effects of these waste materials on the water quality of the receiving stream and we meet today to discuss these matters as they are described in the Report on Pollution of the Detroit River, Michigan Waters of Lake Erie, and their Tributaries, published by the U. S. Department of Health, Education, and Welfare.

The Summary, Conclusions and Recommendations of the Report suggest that Scott Paper Company discharges into the river an excessive quantity of suspended solids and of oxygen-consuming materials. Recommendations are made ". . . to prevent interference with navigation and fish and wild-life propagation." In another part of the Report, specifically the Findings, it is implied that our mill is discharging excessive quantities of phenols, zinc, and copper. We would like to consider these recommendations which have been made, to comment on them, and to tell something of what we have done in the past and what we propose to do in the future concerning the effluent from the mill.

First, let's consider the implied charge that we are discharging excessive quantities of copper, zinc, and phenols. We make no use of copper or zinc compounds in the preparation of our products. We do use machinery which, in part, is constructed of these metals. However, if we were losing as much copper and zinc to the river as is suggested by the Report, we would be experiencing an intolerable corrosion of expensive machinery that would require frequent equipment replacement for us to continue to operate. No such replacement is necessary.

We suggest that further analyses might explain this reported presence of metals. We have not made these analyses because we have had no reason in the past,nor do we have any now, to suspect such losses

The third material, phenol, also is not used in the preparation of our products. Pulpwood is used, of course, and it is known that ligneous compounds derived from wood will produce a phenol-like color reaction with the aminoantipyrine test presumably used in the study. We would like to point out that there is no evidence that these wood compounds are toxic to aquatic life or involved in the production of tastes in water.

Now we come to the more specific concerns expressed in the Recommendations in connection with our effluent, specifically suspended solids and oxygen-consuming material. In spite of our best efforts we do, in fact, contribute more suspended solids to the river than we would like. Because of our concern, Scott Paper Company has taken positive action in this area. Since 1954, expenditures amounting to $1,000,000 have been made for equipment and improvements designed to reduce suspended solids losses. It is estimated that these improvements have resulted in the elimination of about 3,700 tons of suspended solids per year which otherwise would go to the river. We have accomplished this by reducing suspended solids losses from 206 lbs. per ton of production to 135 lbs. per ton of production, a reduction of 35%. Water usage has been reduced during the same period from 190,000 gallons per ton to 120,000 gallons per ton. In a mill as old as the one concerned these are creditable improvements. In addition we have for some years operated a clarifying pond which removes a considerable quantity of solids from the effluent which otherwise would go to the river. We dredge this pond and are removing solids at the rate of 4,000 cubic yards per year and disposing of them as land fill.

In spite of all this we recognize that our suspended solids losses are still too high and during the past several years we have discussed the problem at length with engineers of the Michigan Water Resources Commission. Because of these losses the Water Resources Commission has found it necessary to classify our mill as being one with inadequate control. In view of this classification we have more recently been discussing what further steps we might take to improve our situation with respect to suspended solids. A first step would be to install a new screen in the woodroom, a source of a large quantity of these solids. Engineering on this installation was completed in February of this year and the screen will be installed during our July shutdown.

But we recognize that even this, helpful as it will be, will not be adequate to reduce the solids in the plant's effluent to the level urged by the Water Resources Commission. Consequently we have, at the urging of the Commission's engineers, decided to construct a modern waste clarifier and have for some months been making necessary flow and concentration measurements to enable us to provide a rational design for this installation. Solids removed will be concentrated by filtration or centrifugation and hauled away for land disposal or incineration. A preliminary estimate of the cost of this installation is $1,000,000 plus an annual operating cost of $100,000.

At Scott Paper Company we have recognized that suspended solids in our effluent have created problems. We are taking steps to eliminate these problems.

The Report goes on to recommend that the effluent of the Scott mill be treated to reduce its B.O.D. (Biochemical Oxygen Demand) or oxygen-consuming capacity, to 85 parts per million. Before proceeding further, we wish to emphasize that, contrary to the impression some might have from reading the Report, the effluent from a sulphite pulp and paper mill does not resemble untreated domestic sewage. The oxygen-consuming capacity of the effluent is due largely to the pressence of wood sugar. The other major constituent is lignin, the cementing material in wood. There are no coliform or disease-causing bacteria in this waste.

The Report makes its recommendation concerning B.O.D. in order " . . . to prevent interference with navigation and fish and wildlife propagation." We do not think the Report means to imply that oxygen-consuming material interferes with navigation so we assume that its concern is with fish and wildlife propagation. We further assume that the concern is for the oxygen resources of the river and lake without adequate supply of which fish and wildlife may suffer interference.

What does the Report say about the oxygen resources of the concerned waterways? On Page 1 of the Conclusions we find the statement, "Declining levels of dissolved oxygen in the lower Detroit as it enters Lake Erie are approaching the danger point, indicating trouble in the future unless appropriate remedial action is taken." We will consider this statement in detail later but let's see what else the Report says about the oxygen resources of the waterways.

On Page 8 of the Conclusions we read, "While the present oxygen level in the Detroit River does not cause major interference with water uses, the drop from 100 percent saturation in the upper River to 67 percent in the lower is a warning of dire consequences in the future . . . ". Apparently no major adverse consequences of the present oxygen level were found; the implied minor consequences are not described. The 67 percent saturation in the lower River will be examined later.

On Page 150 of the Findings we find "In no reaches of the Detroit River do levels of dissolved oxygen cause interference with water uses." On Page 280 of the Findings we find "Levels of DO (dissolved

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oxygen) in most of the Michigan waters of Lake Erie are sufficient at this time to prevent interference with water use."

On Page 21 the Report states, "Most of the Michigan waters of Lake Erie displayed high levels of dissolved oxygen." And further, "While present oxygen levels in the lake do not yet cause major interferences with water use, the drop to 4.8 mg/l represents a threat to water uses in the Lake."

So it seems that there is no interference at present with water uses due to dissolved oxygen levels, but the Report expresses some concern for the future.

What are these oxygen levels at present? This (slide) is Figure 12-V of the Findings. It shows average percent saturation of dissolved oxygen but note that it depicts conditions only at the sampling station nearest the U.S. shore. Conditions are poorest, as one would expect, in the lowest reach of the River as indicated by the data for the station nearest the shore on sampling range DT 3.9. But the river is wide here, almost four miles wide. What are conditions like elsewhere on this sampling range extending from Maple Beach to Bar Point in Canada?

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This (slide) is Figure 12-V with bars indicating conditions elsewhere on the sampling range. These data relating to conditions measured in 1962 were kindly supplied by the HEW Detroit River-Lake Erie Project and illustrate that conditions across the range are much better than those at the station nearest the shore. It seems reasonable to look at the whole river, not just one part of it.

Here (slide) is Figure 12A-V which shows minimum dissolved oxygen concentrations for stations nearest the U. S. shore. We have added at station DT 3.9 bars indicating conditions elsewhere on the sampling range. These data, again relating to 1962 conditions, were supplied by the Detroit River-Lake Erie Project. Again we find minimum conditions across the sampling range to be much better than might be supposed if one merely considers the station nearest the shore. We think that many aquatic biologists would agree that these minimum conditions, found only once during the survey, are more than adequate for the fish and wildlife involved.

On Page 163 of the Report we find a section entitled Trends in Water Quality. Its opening sentence reads, "One approach to evaluating trends in water quality and pollution abatement is to compare existing water quality levels and waste discharges with those found during past surveys." The Report compares, in great detail, levels of total coliform organisms, phenols, and chlorides found in the Detroit River in 1962-63 by the Project with levels found in 1946-48 by the International Joint Commission survey. Unfortunately, no comparison is made for dissolved oxygen or B.O.D. We think such comparisons would be both interesting and instructive.

Figure A (slide) shows minimum dissolved oxygen found across sampling range DT 3.9 by the I.J.C. in 1946-48 (green or solid) compared with the data found by the Project in 1962-63 (red or dashed). This comparison is interesting. It indicates that the dissolved oxygen level for minimum measured conditions was at least as good and possibly better in 1962-63 than it was in 1946-48. This implied trend in water quality scarcely supports the statement on Page 1 of the Conclusions of the Report, "Declining levels of dissolved oxygen in the lower Detroit as it enters Lake Erie are approaching the danger point, indicating trouble in the future unless appropriate action is taken." The " . . . dire consequences in the future . . .", which the Report predicts cannot be anticipated from a trend which indicates an improvement in water quality as measured by dissolved oxygen.

Although the Report does not give detailed data for Biochemical Oxygen Demand,it would be interesting to know what the trend is for this parameter of water quality which is a measure of the amount of oxygen required to stabilize organic matter. Data supplied by the Project show that 24-hour composites over a four-day period in June 1964 taken at the station 6,500 feet from the U. S. shore on sampling range DT 3.9 had an average B.O.D. of 2.0 parts per millon. Samples taken 16 to 18 years ago by the I.J.C. at the same station had an average B.O.D. of 2.3 parts per million. Again the trend shown by the data is one of improvement.

On Page 150 of the Findings we read, "It is normal to find a B.O.D. of 2 to 3 parts per million (or 2 or 3 mg/l) in river waters receiving natural drainage; a higher B.O.D. may represent a drain on the dissolved oxygen present in the water." The data supplied by the Project for the station 6,500 feet from the U.S. shore on Range DT 3.9 show an average B.O.D. of 2.0 parts per million.

On Page 150 of the Findings we also read, "In the upper Detroit River, the B.O.D. ranged from 2 to 4 mg/l." Compare this with the 2.0 mg/l (parts per million) reported by the Project for the lower River.

We do not mean to be critical of the B.O.D. data. At best the determination is difficult; precise data are not always obtainable for river B.O.D. when the concentrations are low. The B.O.D. exerted by oxygen-consuming material added near the River Rouge to sampling range DT 3.9 is only a matter of about 15 hours. For example, the oxygen-consuming material in the effluent from the Scott mill would be expected to consume less than 1/20 of 1 mg/l of oxygen by the time it reached range DT 3.9 if it were uniformly distributed across the river.

Now even though Figure 28-V in the Findings tells us that effluents discharged near the River Rouge will be distributed across the river on range DT 3.9 nearly to Bar Point, it is probable that much of these effluents will tend to stay nearer the western shore. Just to emphasize the point let us assume that the Scott effluent mixed with only 1/20 of the total Detroit

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River flow. That portion of the river would then experience less than 1 ppm oxygen depletion by the time it reached range DT 3.9. And the other 95% of the river would experience none at all!

Pollution may be defined as the condition existing when the natural ability of a water course to assimilate a material without damage to other water uses is exceeded. It appears to us that the oxygen-consuming material added to the Detroit River is assimilated by this huge flow of water and does not hinder other water uses. The B.O.D. at the mouth of the river, as nearly as it can be measured, does not exceed that at its head. As measured, it was lower in 1964 than in 1946-48.

The dissolved oxygen resources of the Detroit River are tremendous. It has been estimated by the Board of Consultants to the Southeastern Michigan Sewerage and Drainage Study that the Detroit River carries, as a minimum, 8,900,000 pounds of dissolved oxygen per day. This is equivalent to the oxygen-consuming capacity of the untreated sewage of 53,000,000 people.

Data supplied by the Detroit River-Lake Erie Project demonstrate that at no place or time did oxygen in the Detroit River drop below a level considered adequate by most aquatic biologists. The wastes from the Scott Paper Company mill are not capable of consuming more than one-half of one percent of the oxygen in the Detroit River by the time it reaches its mouth.

The Report on Pollution of the Detroit River, Michigan Waters of Lake Erie presents data, draws conclusions, and makes recommendations relating to the effluent of the Scott Paper Company's Detroit mill and the water which receives it. Some of these data relate to the quantities of zinc, copper, and phenols said to be in our effluent. We respectfully suggest that, since we use no copper or zinc in the preparation of our products, such materials could only come from corrosion and that the quantities reported (some 60 tons per year) are of such magnitude that the need for replacement of expensive machinery would be quite evident to us. No such replacement is necessary. We think additional analyses are needed.

As far as phenols are concerned we do not use these either but suggest that lignin or its compound from wood may be producing phenol-like reactions in the color test employed. We know of no evidence that these ligneous compounds produce tastes in water or are toxic to fish and wildlife.

Another recommendation calls for the reduction of the B.O.D. in our effluent. We do not believe that the data presented demonstrate any significant increase in the B.O.D. of the Detroit River nor do they demonstrate any significant damages to the water resources of the Detroit River or to Lake Erie as a consequence of our effluent. We do not believe that it is demonstrated that the B.O.D. of our waste or the zinc copper and phenol claimed to be in our waste are capable of creating any problem whereby, in the words of the State of Michigan Public Act 245 of 1929 as amended, " . . . any fish or migratory bird life may be destroyed or the growth or propagation thereof prevented or injuriously affected or the value of lawfully taken fish or game is destroyed or impaired . . . ".

The recommendation is made that suspended solids in our effluent be reduced. We have made substantial progress in this area and are working closely with the engineers of the Michigan Water Resources Commission to achieve additional reductions. In a few weeks we will install a new screen for our woodroom wastes. For some months we have been gathering necessary design data for the proper design of a waste clarifier which will cost an estimated $1,000,000 and involve a substantial operating cost of about $100,000 per year.

At Scott Paper Company we are aware of the need to protect our water resources. Over the years we have cooperated with the engineers of the Michigan Water Resources Commission to find ways to meet this need. We hope to continue this cooperation.

MR. STEIN: Thank you, Mr. Logan.

Do you want these charts to appear in the record?

MR. LOGAN: Yes, we would like that.

MR. STEIN: They will appear in the record.

(EIGHT CHARTS FOLLOW)

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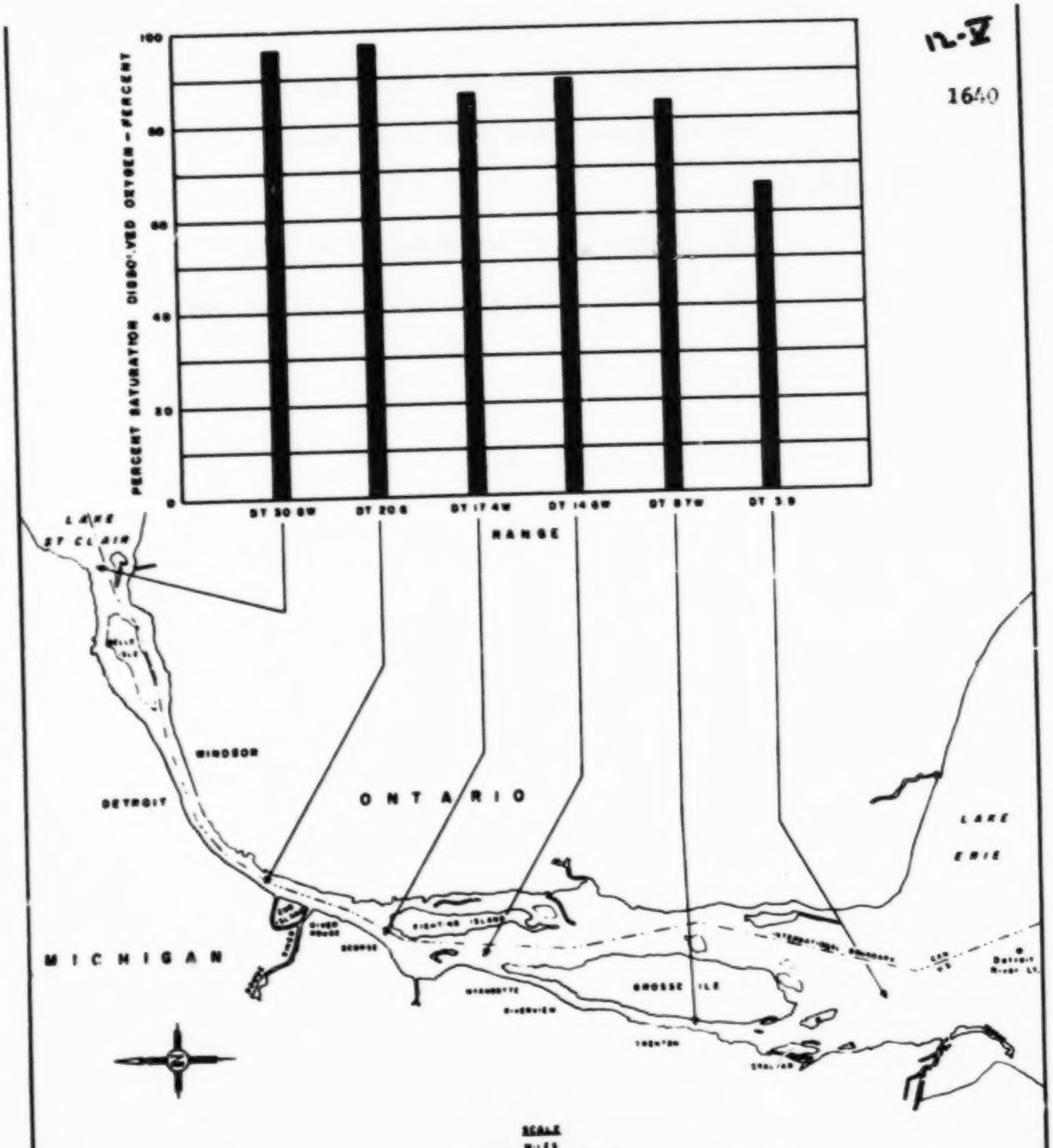

DETROIT RIVER-LAKE ERIE PROJECT

AVERAGE PERCENT SATURATION

DISSOLVED OXYGEN

STATION NEAREST U.S. SHORE

DETROIT RIVER

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE

PUBLIC HEALTH SERVICE

REGION V GROSSE ILE, MICHIGAN

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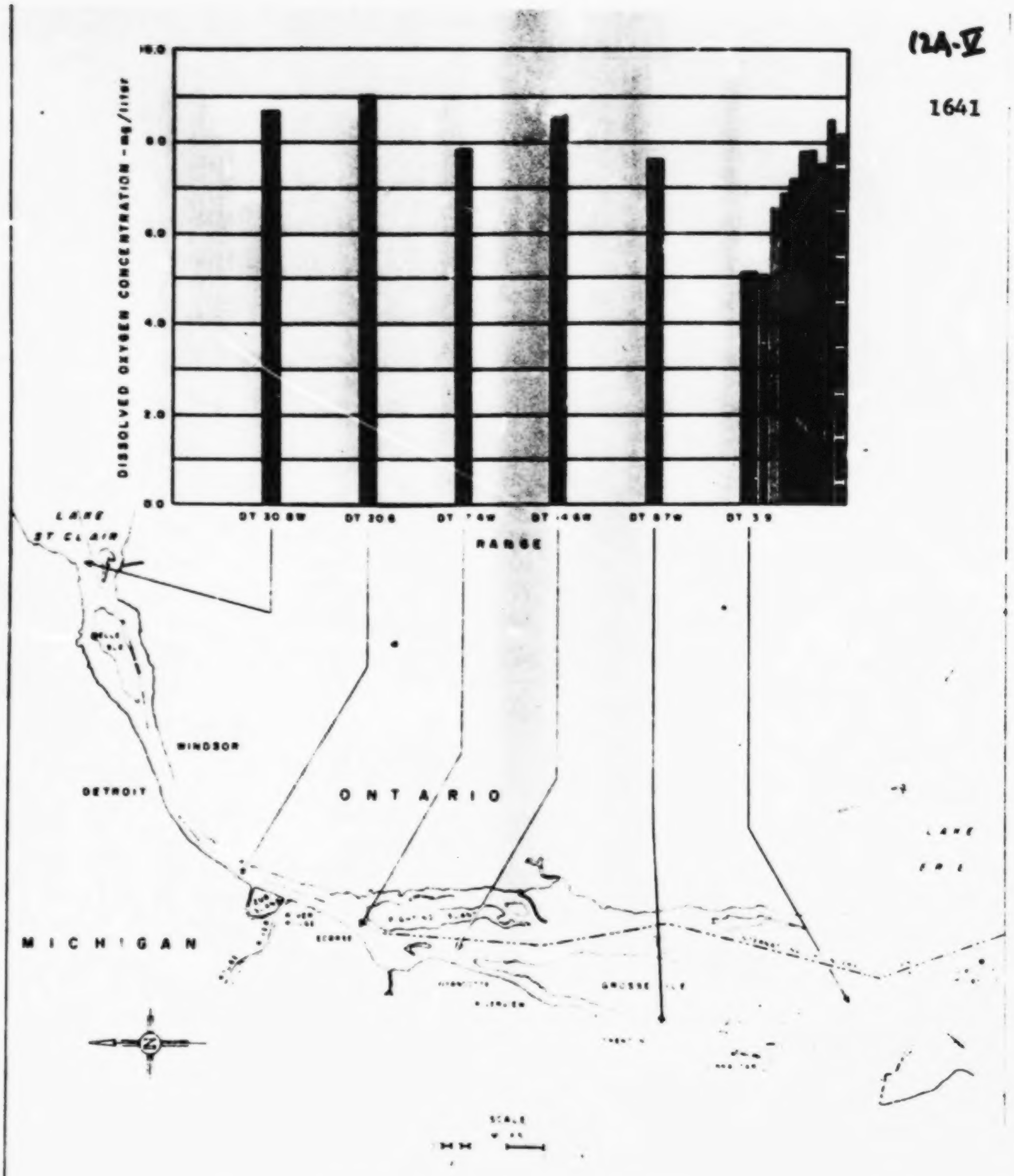

DETROIT RIVER-LAKE ERIE PROJECT

MINIMUM DISSOLVED OXYGEN CONCENTRATIONS

STATION NEAREST U.S. SHORE
DETROIT RIVER

U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN

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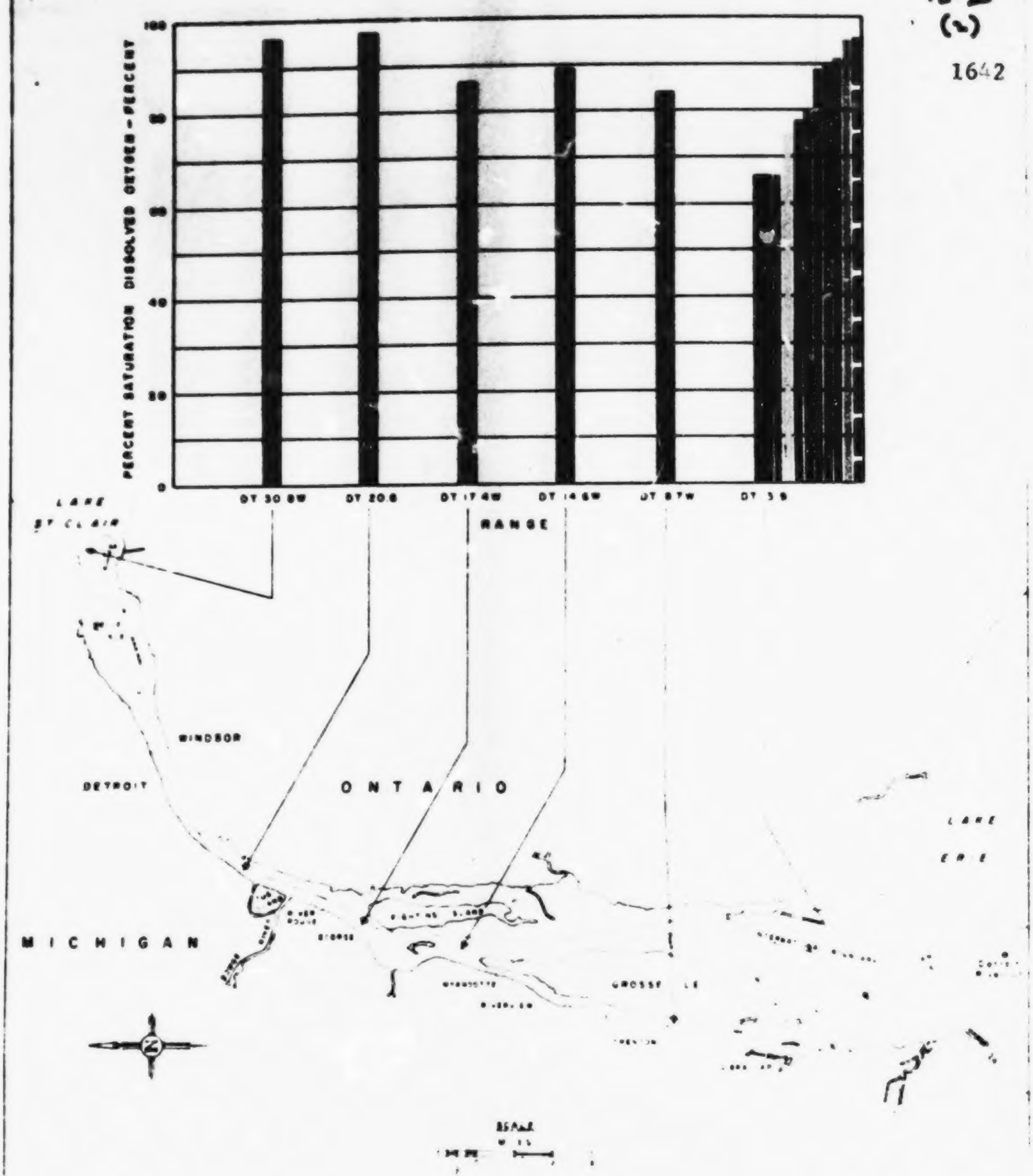
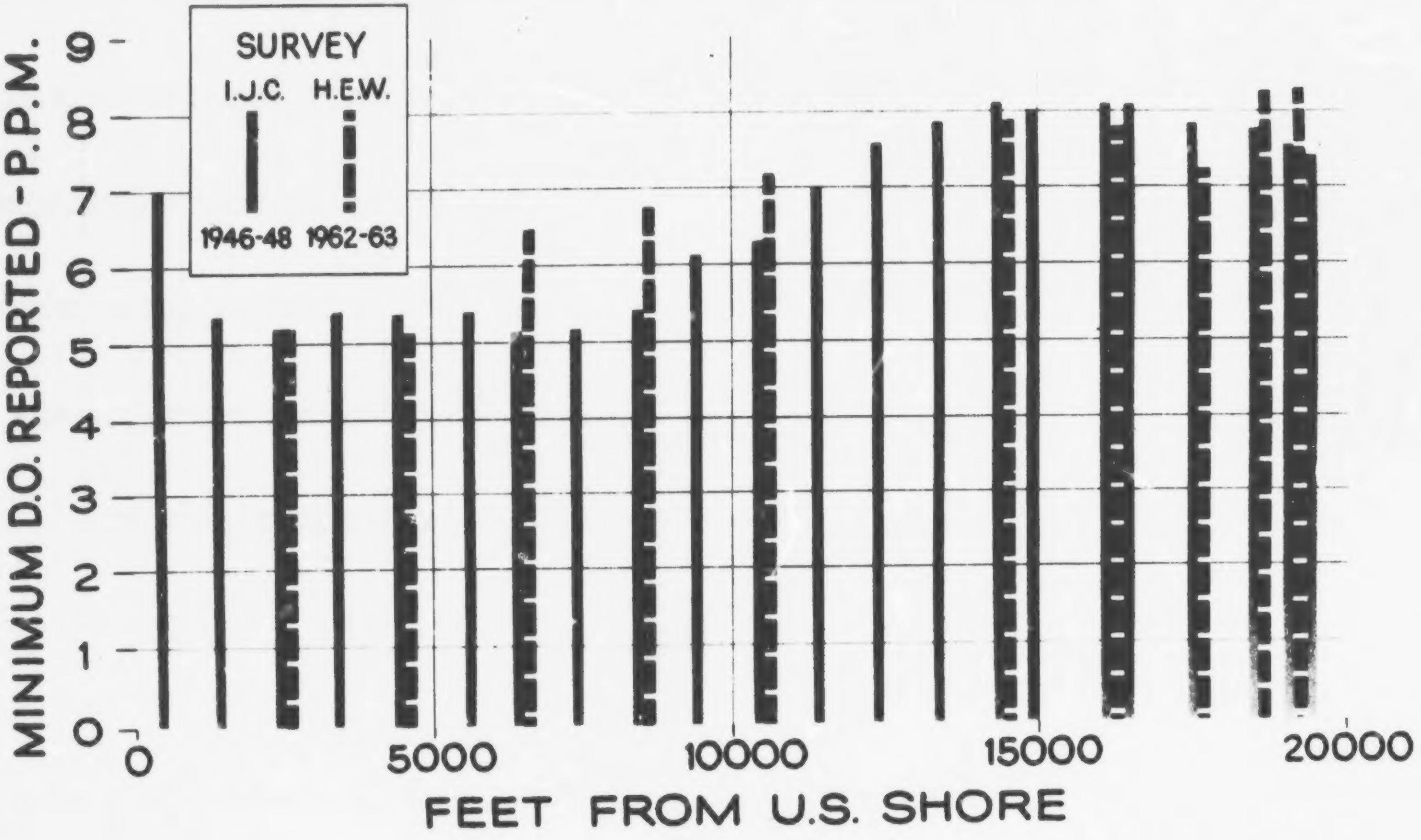


DETROIT RIVER-LAKE ERIE PROJECT
AVERAGE PERCENT SATURATION
DISSOLVED OXYGEN
STATION NEAREST U.S. SHORE
DETROIT RIVER
U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN

FIGURE A

SAMPLING RANGE DT 3.9
MINIMUM D.O. VALUES



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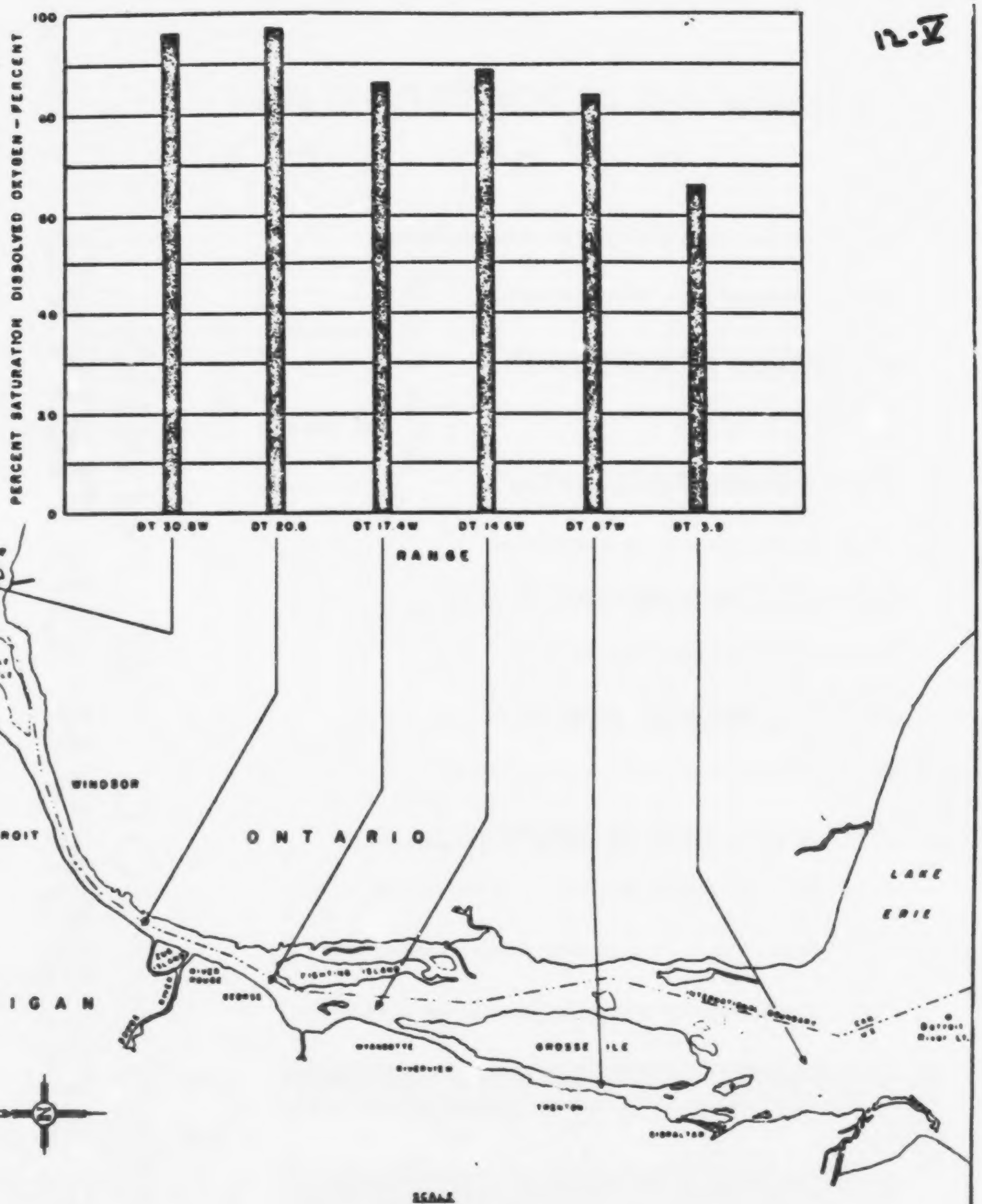

DETROIT RIVER-LAKE ERIE PROJECT

AVERAGE PERCENT SATURATION
DISSOLVED OXYGEN
STATION NEAREST U.S. SHORE
DETROIT RIVER

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN

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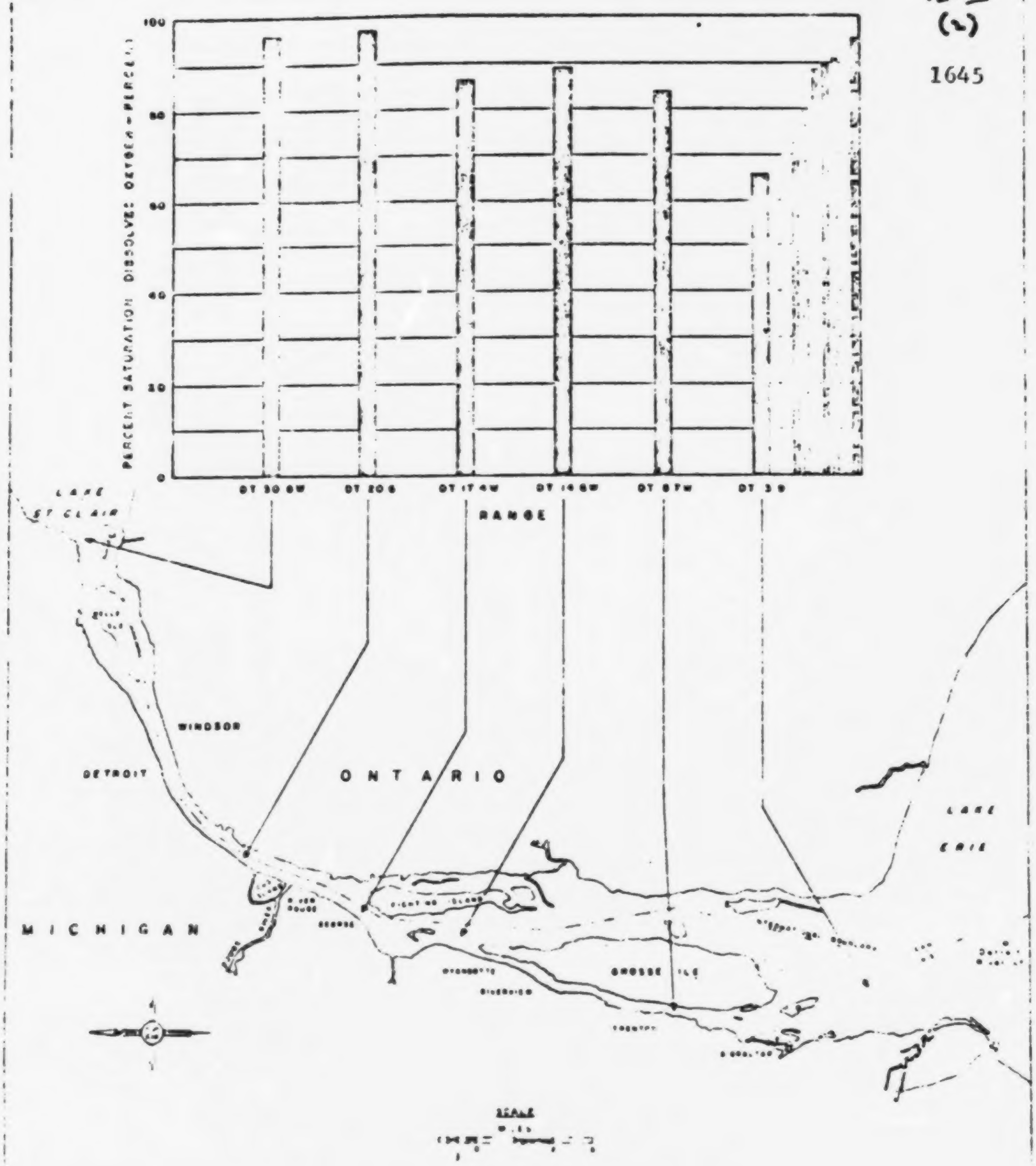

DETROIT RIVER-LAKE ERIE PROJECT

AVERAGE PERCENT SATURATION DISSOLVED OXYGEN

STATION NEAREST U.S. SHORE
DETROIT RIVER

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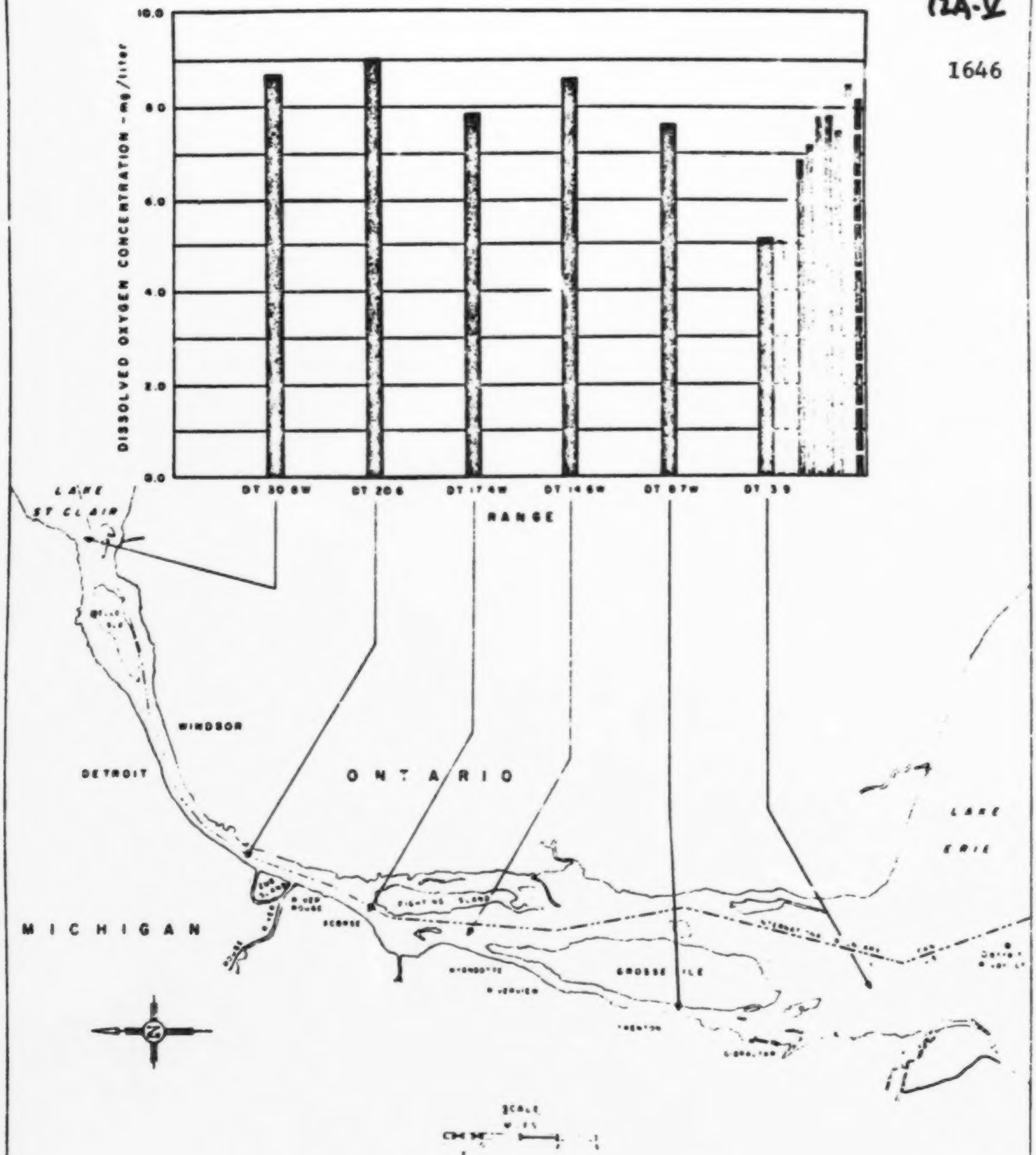


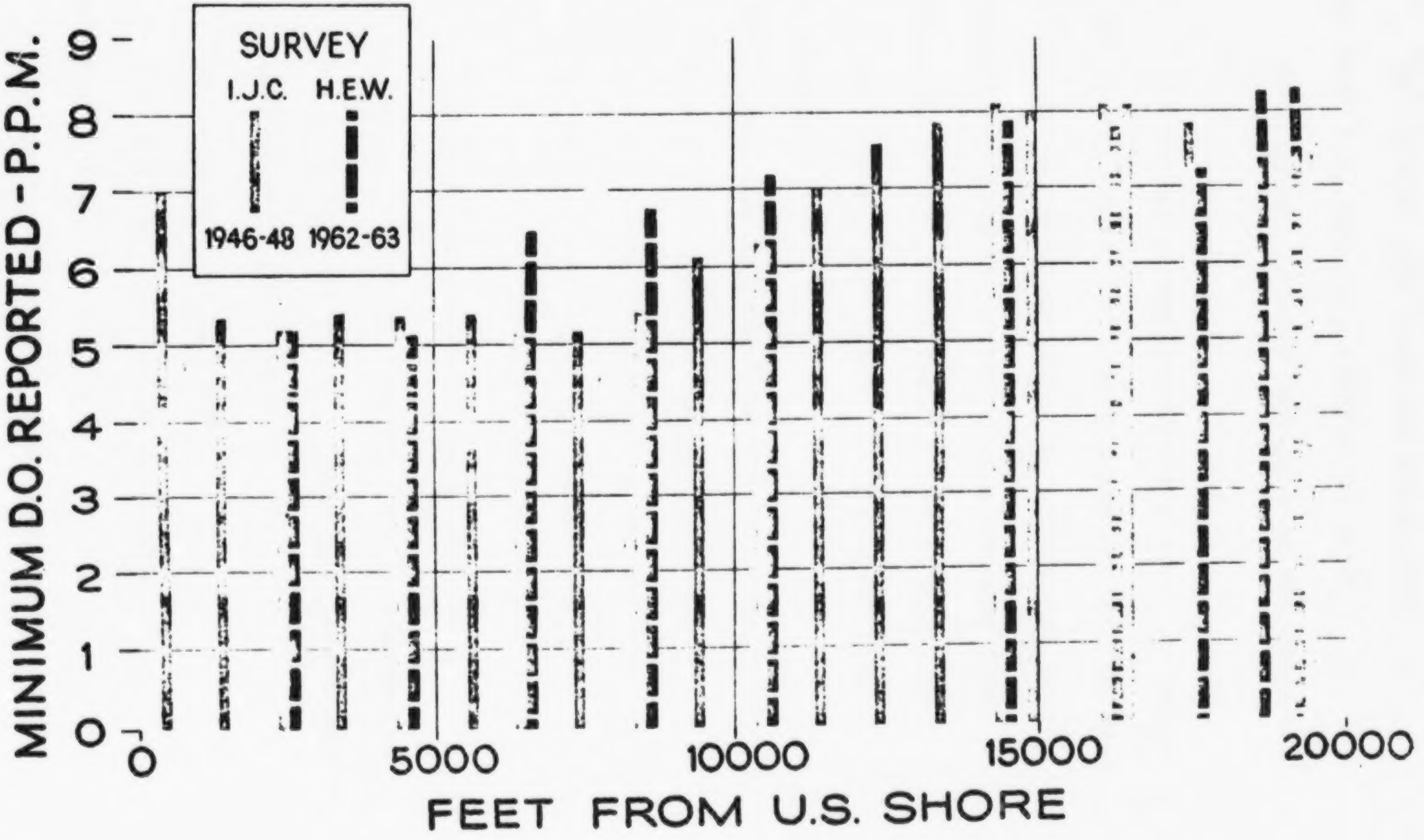
DETROIT RIVER-LAKE ERIE PROJECT

MINIMUM DISSOLVED OXYGEN CONCENTRATIONS

STATION NEAREST U.S SHORE
DETROIT RIVER

U.S. DEPARTMENT OF HEALTH, EDUCATION, & WELFARE
PUBLIC HEALTH SERVICE
REGION V GROSSE ILE, MICHIGAN

FIGURE A SAMPLING RANGE DT 3.9
MINIMUM D.O. VALUES



MR. STEIN: Are there any comments or questions, Mr. Poston?

MR. POSTON: No; not at this time.

MR. OEMING: I have none.

MR. STEIN: Thank you.

Well, I just have one. I see the recommendations of the report. I do not see that this necessarily goes as to phenols or as to copper, but maybe I am mistaken.

MR. LOGAN: No, sir, the recommendations of the report are not--we thought there was an implied charge in the various places in the findings where phenols and copper are mentioned as exceeding certain IJC requirements.

MR. STEIN: Mr. Logan, I don't know what these investigators do; and I think I can safely speak for Mr. Oeming and Michigan here; I have watched them in their regulatory function, while Mr. Adams was here, and Mr. Oeming and ourselves, and I think we both believe the same. We do not deal with implied charges. We say it; or it isn't.

MR. LOGAN: Perhaps the term is not correct. Tables 95, 10V, 11V, and 15 V comment on this.

MR. STEIN: But I do not think there is

an implication. Unless someone says it directly or makes a recommendation, that isn't an actual item. I have read the reports of the Michigan Water Resources Commission for years, and as far as I know, they have the same rule.

MR. LOGAN: We are very pleased to hear that, Mr. Stein.

MR. STEIN: I do have one other thing. You say pollution may be defined as the condition existing when the natural ability of a watercourse to assimilate a material without damage to other water use is exceeded.

Part of my function is statutory drafting. I have read every state law, foreign law, and Michigan law, and read their definitions of pollution. I have gone through the Federal laws. I have gone through every dictionary; but where did you get this definition?

MR. LOGAN: I think that there are many definitions. I did not mean to imply that this was a legal definition by any means.

MR. STEIN: Is it found in any dictionary?

MR. LOGAN: No, not at all. It is found in some writings, though.

MR. STEIN: All right; thank you.

MR. LOGAN: You are welcome, sir.

MR. OEMING: Mr. Chairman, I would now like to provide the opportunity for Monsanto Chemical Company to present a statement. I believe Mr. Jack Garrett is here.

STATEMENT OF J. T. GARRETT,
MANAGER OF POLLUTION ABATEMENT,
MONSANTO COMPANY

MR. GARRETT: Mr. Chairman, conferees, and ladies and gentlemen:

My name is Jack T. Garrett. I am the manager of pollution abatement in the Chemical Department of the Monsanto Company at St. Louis, Missouri.

In accordance with Monsanto's express policy, our Trenton Plant has for years practiced the principles of "good neighborliness" in connection with its waste disposal problems. We have cooperated with the Michigan Water Resources Commission, the City of Trenton, and Wayne County through the years. During this time we have improved our waste handling and disposal procedures, for both esthetic and economic reasons, and the total investment involved is very substantial. It has never been necessary for the regulatory agencies in this area to order us to make any adjustment in our waste handling procedures or to build any new facilities. Whenever any production expansion has necessitated a change in our waste control facilities we have discussed such changes and had proposed remedies approved by the State before proceeding with the expansion.

At the present time we are working on a long-term program of in-plant reduction of sewered production values. This program has, as two of its major objectives, the reduction of pollutants discharged to our multi-lagoon treatment system and the recovery of these values for economic reasons.

At the present time we do not know where this program will leave us in connection with our soluble phosphate discharges. Certainly there will be less; but how much less we cannot say until the program has been completed and evaluated.

We were certainly dismayed to find the recommendation that we reduce our soluble phosphate discharge by 80 per cent in the Public Health Service report (p. 46, "Report on Pollution of the Detroit River, Michigan Waters of Lake Erie and their Tributaries - Summary, Conclusions, and Recommendations," dated April, 1965).

Although Phosphates are necessary nutrients in the growth of algae, so are hundreds of other materials, including water, a whole host of trace essential elements, nitrogen, and others.

To our knowledge, there is no evidence

that phosphates, of themselves, cause excessive algae growth, all other factors being constant. Even the Public Health Service Report just mentioned is vague about this point. We have never witnessed excessive algae growths in our own lagoons, although there certainly is evidence of algae in these lagoons as there is in the river and all other rivers we have any knowledge of, and there was, I am sure, when old Fort Detroit was the only man-made establishment contributing to the pollution of the river in this area.

We feel that the recommended 80 per cent reduction is unrealistic, and we do not understand how this figure is derived. We therefore request that this recommendation be deleted from the conferees' report and no specific per cent reduction be required until scientific justification is available.

Nevertheless, we intend to continue to reduce this discharge of soluble phosphates and any other pollutants we might contribute to the lowest possible level consistent with intelligent economics.

Thank you.

MR. STEIN: Thank you. Are there any comments or questions?

MR. POSTON: I don't think I have any.

MR. STEIN: Do you have?

MR. OEMING: I have none.

MR. STEIN: Thank you very much, Mr. Garrett.

MR. OEMING: The Wyandotte Chemical Corporation has indicated that it has a statement to present. I would like to call on Mr. Day, I believe, of the Wyandotte Chemical Company.

STATEMENT OF WILLIAM R. DAY,
CORPORATE SECRETARY, WYANDOTTE CHEMICALS CORPORATION

MR. DAY: Mr. Chairman, conferees, and not somnolent attendees:

MR. STEIN: They are non-somnolent after that introduction.

MR. DAY: My name is William R. Day, corporate secretary of Wyandotte Chemicals Corporation, and our residence is on the east bank of the Trenton Channel of the Detroit River.

I have the following statement to be made on behalf of Wyandotte Chemicals Corporation.

First of all, we commend the Department of Health, Education, and Welfare on the thoroughness of its report. The intense detail, and volume of the data collected is admirable. This report, as its introduction and background notes, can appropriately be regarded as the culmination of 50 years of public and private agency investigations of Detroit River water quality.

I might say that I hope these words of commendation approach those which have previously been made today on behalf of a well-known outstanding labor organization. (Laughter.)

Our admiration of the report must, however, be tempered with realism. So, when we come to the conclusions and recommendations, we feel obliged to point out some of the practical realities of industrial pollution control achievement in so far as Wyandotte Chemicals is specifically concerned.

The report recommends with respect to our North and South Plants, that:

1. Facilities be provided capable of producing an effluent not to exceed:
   a. Suspended solids concentration of 35 mg/l
   b. Settleable solids concentration of 5 mg/l.

The basis for the selection of these solids concentration limits cannot clearly be derived from the report.

The suspended and settleable solids standards of 35 mg/l and 5 mg/l, respectively, are, of course, used throughout the report as recommendations to be achieved by municipal and industrial plants. I believe, as Mr. Black characterized it, it is an across-the-board standard limitation or objective. We cannot help but feel that these standards have been arbitrarily selected without adequate consideration of the practicability of their achievement or their effects on the river water quality. The standard for suspended solids, particularly, approaches, if it does not exceed, the limit of capability of presently available sedimentation methods for solids removal, such as lagooning or mechanical settling. In our view, this standard which, on a calculated basis, would only permit a suspended solids increase from an average of 7.5 ppm in the upper river to an average of 8.0 ppm at the mouth, is unnecessarily restrictive. We find it difficult to comprehend the purpose served by such a low level of suspended solids.

Pursuing the subject from a more realistic viewpoint, we must point out that Wyandotte Chemicals has recently spent $25,000 in upgrading its solids-carrying waste handling system, and the company's management has approved a further $250,000 investment to this end. In addition, several other projects are under engineering study which will incorporate solids-carrying waste, now discharged into the river, into the solids treatment system. Thus, we seek an improvement in solids removal from river effluent within the realm of practicality. We prefer this approach to the will-o-the-wisp pursuit of the Federal Report's recommended 35 mg/l on suspended solids and 5 mg/l on settleable solids.

The report further recommends that Wyandotte Chemicals Corporation "continue the investigation of satisfactory methods of disposing of chlorides, and alternate methods of disposal of concentrated brines, such as subsurface disposal." Actually, we have already taken more positive steps in this area. Since the industrial survey on which this report is based was made, we have built and have in operation a calcium chloride plant which, at capacity, removes as a salable product 420,000 pounds per day of chlorides previously discharged to the river as waste from our North Plant Solvay Process operation. At present, this is the only technologically practical means for control of chlorides from the Solvay Process operation, and it is strictly limited by the market demand for calcium chloride. We are investigating the possibility of subsurface disposal for the remainder of the wastes from this process, but consider this a long-term project requiring the solution of a number of technical problems in which the prospects of success are debatable.

An engineering study is in progress on the recovery and re-use of waste brine from our electrolytic cell chlorine operation. Although we shall continue the chloride reduction program, we must remark the Federal

Report's own statement that these concentrations are "not yet significant enough to cause major interference with water use." We shall keep trying, not because this report is unable to decide whether chlorides are good or bad, but because of that urge, pervasive in the chemical industry, to convert waste products into useful products.

As a Detroit industry which has been proud of its Michigan Water Resources Commission "A" (Control adequate) Rating for many past years and running, we can state with assurance that we will continue our efforts to maintain that rating. We will continue to investigate and install waste control facilities which are capable of economical and practical achievement and which will contribute to a useful change in river water quality. But frankly, we harbor little hope for the attainment of any theoretical standards which are impractical and unproductive of identifiable results.

I thank you.

MR. STEIN: Thank you, Mr. Day.

Have you any comments, Mr. Poston?

MR. POSTON: No comments.

MR. OEMING: I have none.

MR. STEIN: Just one question, or two.

You emphasized, through the report--and I appreciate the practicality and the realism. When you talk about the calcium chloride plant which at capacity removes a salable product of 420,000 pounds a day of chloride previously discharged to the river, and say that it is strictly limited by the market demand for calcium chloride, that means when you cannot sell the salt you do not use it, you just put it in the river?

MR. DAY: No. This means that--I think the report mentioned something like 1,300,000 pounds per day of chlorides, going from the corporation's plant to the river. We cite this because by reason of putting in the calcium chloride plant which extracts the calcium chloride from the 1,300,000 pounds, thereby, when the plant is going at capacity there will be 420,000 pounds less going in the river.

MR. STEIN: That is the question I am asking, if that figure is strictly limited to the market. Supposing you cannot sell calcium chloride, you are not going to run that plant and take out that 420,000 pounds a day?

MR. DAY: I think that statement, the demand being able to take it, is out of an abundance of precaution. Right today, Mr. Stein, we cannot make enough calcium chloride. We are very happy about it.

MR. STEIN: All right; thank you; that is the question.

MR. OEMING: I would now like to call upon Pennsalt Chemicals Corporation. Is Mr. Tracht in the audience?

MR. TRACT: Yes.

STATEMENT OF J. W. TRACHT,
PENNSALT CHEMICALS CORPORATION

MR. TRACHT: Mr. Chairman, conferees, members of the Commission, and guests:

My name is J. W. Tracht, and I am the corporate representative of Pennsalt on air pollution and water pollution control matters.

This statement over the name of Mr. McWhister, our vice-president, was sent in a letter to Mr. Oeming on June 4, and the date of this is June 7. Unfortunately, we did not have extra copies made for you gentlemen here, but I shall leave my statement with the recorder.

June 7, 1965

STATEMENT of the Pennsalt Chemicals Corporation on the findings of the cooperative Federal-State investigation of pollution in the Michigan portions of the Detroit River and Lake Erie as given in the April. 1965 report of the U. S. Department of Health, Education and Welfare, Public Health Service.

From preliminary study of the full report, our technical people consider this investigation to be a comprehensive and well-conducted survey of the river and lake conditions.

As a matter of Company policy, we are in accord with the objective of reducing the pollution in the Detroit River. Major expenditures have been made at these and other Pennsalt locations over the past five years for installations for pollution control.

We will continue to cooperate with the Water Resources Commission of the State of Michigan in the program to improve the conditions in the Detroit River. Engineering studies are underway on additional corrective measures toward this end.

As regards the specific recommendations made in the report, we consider the limits of suspended solids concentration of 35 milligrams per liter and of settleable solids concentration of five milligrams per liter to be unnecessarily severe and not practicable to realize. The basis for setting these recommended levels is not stated in the report. The following is offered to illustrate the severity of these recommended limits. Should the total waste flow from all municipal treatment plants and industrial plants contain solids concentration at these levels, the average concentration of suspended and settleable solids in the Detroit River would be increased by less than one miligram per liter (one part per million). This increase would be but a small fraction of the total of suspended and settleable solids already existing in the river above Belle Isle.

We ask that **these** recommended levels be reconsidered and that more realistic figures be established. Any levels of concentrations so established should, of course, take into account the conditions in the river water reaching our plants, both as the result of natural runoff and of municipal and industrial wastes discharged to the river above the Pennsalt location.

Original signed by

G. Mc WHISTER
Vice-President

J. W. Tracht

We appreciate the opportunity of making this statement.

MR. STEIN: Thank you, Mr. Tracht. Are there any comments or questions?

MR. POSTON: No questions.

MR. OEMING: I have none.

MR. STEIN: Thank you for the statement.

Mr. Oeming?

MR. OEMING: Now, Mr. Chairman, I have one letter that I would like to request be entered into the record.

This is addressed to me at the Water Resources Commission, from the E. I. duPont De Nemours & Company, by the plant manager, and I think this constitutes the only statement or comment that they have.

MR. STEIN: Without objection, that will be entered in as if read.

E. I. DU PONT DE NEMOURS & COMPANY
Incorporated
P. O. Box 4508
Ecorse 29, Mich.

June 10, 1965

Water Resources Commission
200 Mill Street
Station B
Lansing, Michigan 48913
Attention: Loring F. Oeming, Executive Secretary

Gentlemen:

Thank you for your letter of May 10, 1965 advising us of the reconvened conference on the Detroit River on June 15, 1965. We do not plan to submit any statement but we will be following the progress of the conference with interest.

We are aware of the fact that the pH of our effluent stream is lower than the limit of 5.8 which has been set by your office. This matter is under intensive study and we are working on plans for alleviating this condition. We will then get in touch with you promptly to review the problem and our proposals for meeting it.

Very truly yours,
C. LEISURE
Plant Manager

MR. OEMING: All right. Now, Mr. Chairman, this represents all the industries in the Detroit area that have responded or indicated to me their desire to present a statement at this conference.

As I informed you earlier, by a letter of March 10 to all of the industries mentioned in the report, they were informed that they could have the opportunity to make a statement; and I have no others at this time who have told me that they so wished.

MR. STEIN: Mr. Oeming, let me ask you: Do you think if we started at 9:30 we could complete the presentation by noon tomorrow, or would you think we would need more time. I would like your judgment on this.

MR. OEMING: My best guess is that if you started at 9:30 that you ought to be able to finish by 12:30.

MR. STEIN: All right, that would be fine. We shall stand recessed until 9:30 tomorrow, meeting in the lecture hall in this building. Enter through the main entrance and follow the signs.

(Conference adjourned until June 18, 1965, at 9:30 a. m.)

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